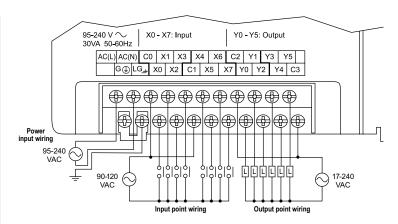
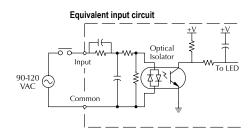
DL05 I/O Specifications

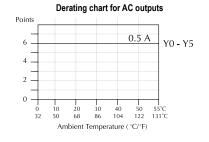
D0-05AA \$227.00

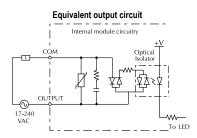
Wiring diagram and specifications

DO-05AA Specifications		
AC Power Supply Specifications	Voltage Range	95–240 VAC (30VA)
	Number of Input Pts.	8
	Number of Commons	2 (isolated)
	Input Voltage Range	90-120 VAC
	Frequency Range	47–63 Hz
AC Input	Input Current	8mA @ 100 VAC at 50 Hz 10mA @ 100 VAC at 60Hz
Specifications	On Current/Voltage Level	>6mA/75VAC
	OFF Current/ Voltage Level	<2mA/20VAC
	OFF to ON Response	<40ms
	ON to OFF Response	<40ms
	Fuses	None
	Number of Output Points	6
	Number of Commons	2 (isolated)
	Output Voltage Range	17–240 VAC 47–63 Hz
	Peak Voltage	264VAC
	ON Voltage Drop	1.5 VAC>50mA 4.0 VAC<50mA
AC Output	Maximum Current	0.5 A/pt 1.5 A/ common
Specifications	Maximum Leakage Current	4mA at 264VAC
	Maximum Inrush Current	10A for 10ms
	Minimum Load	10mA
	OFF to ON Response	1ms
	ON to OFF Response	1ms + 1/2 cycle
	Fuses	None (external recommended)









Features at a Glance

The DL05 and DL06 micro PLCs are complete self-contained systems. The CPU, power supply, and I/O are all included inside the same housing. Option modules are available to expand the capability of each PLC family for more demanding applications. The standard features of these PLCs are extraordinary and compare favorably with larger and more expensive PLCs.

The specification tables to the right are meant for quick reference only. Detailed specifications and wiring information for each model of the DL05 and DL06 PLCs can be found in those specific sections.

Program capacity

Most boolean ladder instructions require a single word of program memory. Other instructions, such as timers, counters, etc., require two or more words. Data is stored in V-memory in 16-bit registers.

Performance

The performance characteristics shown in the tables represent the amount of time required to read the inputs, solve the Relay Ladder Logic program and update the outputs.

Instructions

A complete list of instructions is available at the end of this section.

Communications

The DL05 and DL06 offer powerful communication features normally found only on more expensive PLCs.

Special features

The DC input and DC output PLCs offer high-speed counting or pulse output. Option module slots allow for discrete I/O expansion, analog I/O, or additional communication options.

DL05 CPU Specifications System capacity Total memory available (words)...... Ladder memory (words)..... V-memory (words)..... 4096 User V-memory..... 3968 Non-volatile user V-memory......128 Battery backup..... Yes1 Total built-in I/O.....14 Inputs..... Outputs..... 6 I/O expansion..... **Performance**Contact execution (Boolean)......0.7 µs Typical scan (1K Boolean)².....1.5-3 ms. Instructions and diagnostics RLL ladder styleYes RLLPLUS/flowchart style (Stages)Yes/256 Run-time editing......Yes Supports Overrides..... ... YesVariable/fixed Scan Number of Instructions Types of Instructions: Control relays..... 133 512 Timers..... 128 Counters......128 Immediate I/O Subroutines Yes For/next loops Yes Timed interrupt Yes Integer math Floating-point math......No PID..... Yes Bit of word ASCII print.....Yes Real-time clock/calendarYes¹ Internal diagnostics......Yes Password security..... System and user error log **Communications**Built-in portsTwo RS-232C Protocols supported: K-sequence (proprietary protocol)......... DirectNet Client/Server......Yes Modbus RTU Client/Server.....Yes ASCII out..... aud rate Port 19,600 baud (fixed) Baud rate Port 2.....selectable 300-38,400 baud (default 9,600) Specialty Features High speed counter.....Yes, 5kHz³ Pulse output.....Yes, 7kHz³ Pulse catch input..... 1- These features are available with use of certain option modules. Option module specifications are located later in this section. 2- Our 1K program includes contacts, coils, and scan overhead. If you compare our products to others, make sure you include their scan overhead. 3- Input features only available on units with DC inputs and output features only available on units with DC outputs.

DL06 CPU Specifications
System canacity
System capacity Total memory available (words)14.8K
Ladder memory (words)7680
V-memory (words)
Non-volatile user V-memory128
Built-in battery backup (D2-BAT-1)Yes
Total I/O
Outputs
I/O expansionYes ¹
Performance
Contact execution (Boolean)
Instructions and diagnostics RLL ladder styleYes
RLLPLUS/flowchart style (Stages) Yes/1024
Run-time editingYes Supports OverridesYes
ScanVariable/fixed
Number of Instructions229
Types of Instructions: Control relays1024
Control relays
Counters
Immediate I/OYes
SubroutinesYes
For/next loops
Timed interruptYes
Integer mathYes
Trigonometric functionsYes Floating-point mathYes
PIDYes
Drum sequencersYes
Bit of word
ASCII in, out, printYes
LCD instructionYes
Real-time clock/calendar
Password securityYes
System and user error logNo
Communications
Built-in ports: One RS-232C
One multi-function RS232C/RS422/RS485
NOTE: RS485 is for MODBUS RTU only.
Protocols sup56ported: K-sequence (proprietary protocol)
DirectNet Client/ServerYes
Modbus RTU Client/ServerYes
ASCII in/outYes
Baud rate _ Port 1,600 baud
(fixed) Port 2selectable 300-38.400
baud
(default 9,600)
Specialty Features Filtered inputsYes3
Interrupt inputYes3
High speed counterYes, 7kHz3
Pulse outputYes, 10kHz3 Pulse catch inputYes3
1- These features are available with use of
certain option module. Option module specifications are located later in this section.
2- Our 1K program includes contacts, coils, and scan
overhead. If you compare our products to others, make sure you include their scan overhead.
3- Input features only available on units with DC inputs and output features only available on units with DC outputs.
•

Features at a Glance

DirectSOFT software

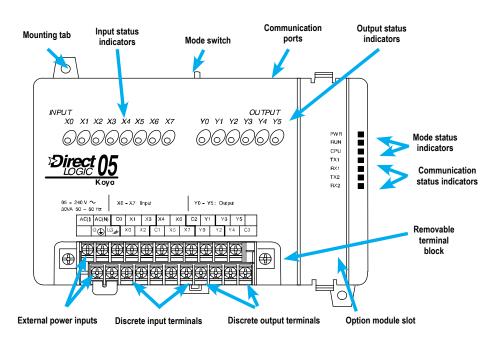
The DL05 and DL06 PLCs use the same familiar DirectSOFT programming software that our larger PLCs use. A FREE version of DirectSOFT gives you all the great features of the full version, but with a 100-word PLC program download limitation. For programs larger than 100 words, the full package is required. The FREE PC-DS100 software may be sufficient to program the DL05 and DL06. If you are programming with a full package version prior to v6.0, you will need v2.4 or later for the DL05 PLCs and v4.0 or later for the DL06. We always recommend the latest version for the most robust features. See the DirectLOGIC Overview section DL in this catalog for a complete description of DirectSOFT including features, part numbers of programming packages and upgrades.

Programming Handheld programmer....<u>D2-HPP</u> \$590.00 DirectSOFT Programming for Windows

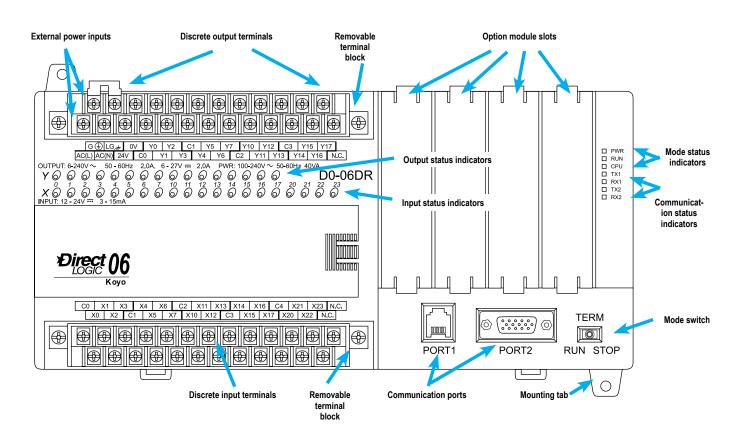
\$462.00

PC-DSOFT6 PC-DS100 Free

PC-R60-U (upgrade) \$291.00



Hardware features diagrams



www.automationdirect.com DL05 / DL06 PLCs tDL5-4

Product Dimensions and Installation

Temperature probe

Power source

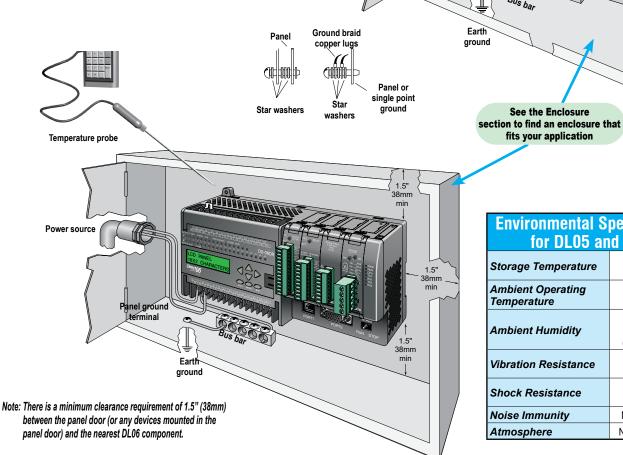
Panel ground

It is important to understand the installation requirements for your DL05 or DL06 system. Your knowledge of these requirements will help ensure that your system operates within its environmental and electrical limits.

Plan for safety

This catalog should never be used as a replacement for the user manual. You can purchase, download free, or view online the user manuals for these products. The **D0-USER-M** is the publication for the DL05 PLCs, and the D0-06USER-M is the publication for the DL06 PLCs. The <u>D0-OPTIONS-M</u> is the user manual for the option modules. These user manuals contain important safety information that must be followed. The system installation should comply with all appropriate electrical codes and standards.

Unit dimensions and

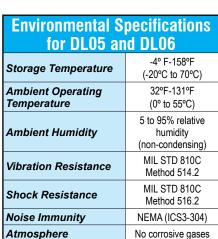


Note: There is a minimum clearance requirement of 2" (51mm) between the panel door (or any devices mounted in the panel door) and the nearest DL05 component.

50mm

50mm

50mm



See the Enclosure

fits your application

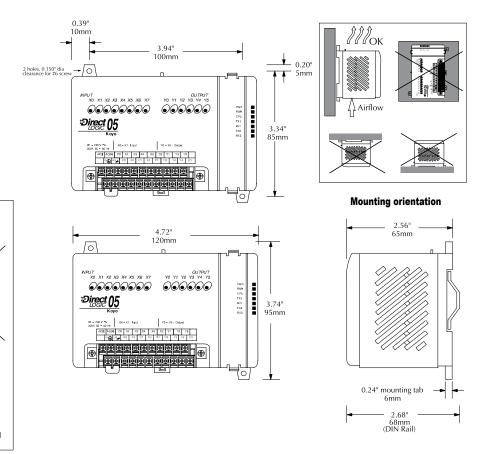
www.automationdirect.com DL05 / DL06 PLCs tDL5-5

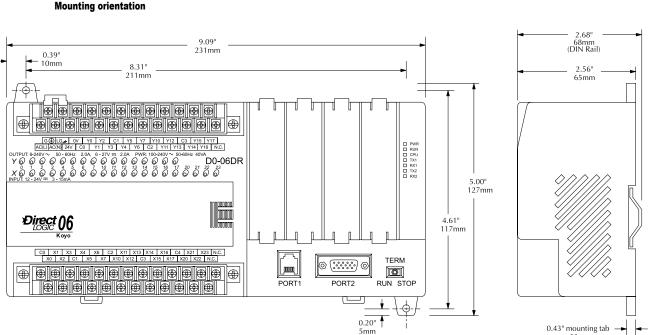
Product Dimensions and Installation

Mounting Orientation

DL05 and DL06 PLCs must be mounted properly to ensure ample airflow for cooling purposes. It is important to follow the unit orientation requirements and to verify that the PLC's dimensions are compatible with your application. Notice particularly the grounding requirements and the recommended cabinet clearances.

Airflow





<u>www.automationdirect.com</u> DL05 / DL06 PLCs tDL5-6

Ports, Status Indicators, and Modes

Port 1

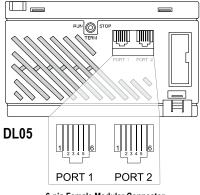
Port 1 is a 6-pin, fixed configuration port and has the same pin assignments on the DL05 and the DL06. Please refer to the table and diagrams on this page. This port can be used to connect to an HPP, DirectSOFT, an operator interface, or other external device. Features include:

- 9600 baud
- 8 data bits
- Odd parity
- 1 start bit, 1 stop bit
- Station address of 1
- Asynchronous, half-duplex, DTE

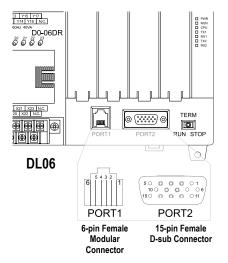
Protocols supported (as Server):

• K sequence, *Direct*NET, Modbus RTU

DI	DL05 & DL06 Port 1 Pin Descriptions		
1	OV	Power (-) connection (GND)	
2 3	5V	Power (+) connection	
3	RXD	Receive data (RS-232C)	
<i>4</i> 5	TXD	Transmit data (RS-232C)	
5	5V	Power (+) connection	
6	0V	Power (-) connection (GND)	



6-pin Female Modular Connector



Port 2

Port 2 is a configurable port on both the DL05 and the DL06 PLCs. The DL05 PLC uses a 6-pin modular connector and offers RS-232 communications only. The DL06 PLC uses a 15-pin HD-sub connector and offers RS-232, RS-422, or RS-485 communications. Please refer to the table and diagrams on this page for more information. This port can be used to connect to an HPP, DirectSOFT, an operator interface, or other external device. Features of port 2 include:

- 300, 600, 1200, 2400, 4800, 9600 (default), 19,200, 38,400 baud
- 8 data bits
- Odd (default), even, or no parity
- 1 start bit, 1 stop bit
- Station address:
 1 (default)
 1-90 DirectNET, K sequence
 1-247 Modbus RTU
- · Asynchronous, half-duplex, DTE

Protocols supported:

 K sequence (Server), *Direct*NET (Client/Server), Modbus (Client/Server)

DL05 Port 2 Pin Descriptions			
1	OV Power (-) connection (GND)		
2	5V	Power (+) connection	
3	RXD	Receive data (RS-232C)	
4	TXD	Transmit data (RS-232C)	
5	RTS	Ready to send	
6	0V	Power (-) connection (GND)	

	DL06 Port 2 Pin Descriptions		
1	5V	Power (+) connection	
2	TXD	Transmit data (RS-232C)	
3	RXD	Receive data (RS-232C)	
4	RTS	Ready to send (RS232C)	
5	CTS	Clear to send (RS232C)	
6	RXD-	Receive data (-) (RS-422/485)	
7	0V	Power (-) connection (GND)	
8	0V	Power (-) connection (GND)	
9	TXD+	Transmit data (+) (RS-422/485	
10	TXD-	Transmit data (-) (RS-422/485)	
11	RTS+	Ready to send (+) (RS-422/485)	
12	RTS-	Ready to send (-) (RS-422/485)	
13	RXD+	Receive data (+) (RS-422/485)	
14	CTS+	Clear to send (+) (RS-422/485)	
15	CTS-	Clear to send (-) (RS-422/485)	

DL05 and DL06 status indicators

	Status Indicators		
Indicator	Status	Meaning	
PWR	ON	Power good	
FVVK	OFF	Power failure	
	ON	CPU is in Run Mode	
RUN	OFF	CPU is in Stop or Program Mode	
CPU	ON	CPU self diagnostics error	
CPU	OFF	CPU self diagnostics good	
TX1	ON	Data is being transmitted by the CPU-Port 1	
	OFF	No data is being transmitted by the CPU-Port 1	
RX1	ON	Data is being received by the CPU-Port 1	
	OFF	No data is being received by the CPU-Port 1	
TX2	ON	Data is being transmitted by the CPU-Port 2	
	OFF	No data is being transmitted by the CPU-Port 2	
RX2	ON	Data is being received by the CPU-Port 2	
	OFF	No data is being received by the CPU-Port 2	

DL05 and DL06 mode switches

Mode Switch Position	CPU Action
RUN (Run Program)	CPU is forced into the RUN mode if no errors are encountered. No program changes are allowed by the programming/monitoring device.
TERM (Terminal)	RUN PROGRAM and the TEST modes are available. Mode and program changes are allowed by the programming/monitoring device.
STOP	CPU is forced into the STOP mode. No changes are allowed by the programming/monitoring device.

Use the optional low profile 15-pin adapter to make option module wiring easier.

