DL205 CPU SPECIFICATIONS

DL205 CPU Comparison					
System Capacity	**D2-230**	**D2-240**	*D2-250*	**D2-250-1**	**D2-260**
Total memory available (words)	2.4K	3.8K	14.8K	14.8K	30.4
Ladder memory (words)	2048 EEPROM	2560 EEPROM	7680 Flash	7680 Flash	15872 Flash
V-memory (words)	256	1024	7168	7168	14592
Battery backup	Yes	Yes	Yes	Yes	
Total CPU memory I/O pts. available *(actual I/O pts. depend on I/O configuration method selected)*	256	896 *(320 X + 320 Y + 256 CR)*	2048 *(512 X + 512 Y + 1024 CR)*	2048 *(512 X + 512 Y + 1024 CR)*	8192 *(1024 X + 1024 Y + 2048 CR + 2048 GX + 2048 GY)*
Local I/O (pts.)	256	256	256	256	256
Local Expansion I/O (pts.)	none	none	none	768 (2 exp. bases max) *(Including local I/O)*	1280 (4 exp. bases max.) *(Including local I/O)*
Serial Remote I/O (pts.)	N/A	896 max. *(Including local I/O)*	2048 max. *(Including local and exp.I/O)*	2048 max. *(Including local and exp.I/O)*	8192 max. *(Including local & exp. I/O)*
Remote I/O channels	N/A	2	8 (7+1 CPU port)	8 (7+1 CPU port)	8 (7+1 CPU port)
I/O per remote channel	N/A	2048 *(limited to 896)*	2048	2048	2048
Ethernet Remote I/O	N/A	Yes	Yes	Yes	Yes
Discrete I/O pts.	N/A	896 max. *(Including local I/O)*	2048 max. *(Including local and exp.I/O)*	2048 max. *(Including local and exp.I/O)*	8192 *(Including local and exp.I/O)*
Analog I/O channels	N/A	Map into V-memory	Map into V-memory	Map into V-memory	Map into V-memory
Remote I/O channels	N/A	Limited by power budget	Limited by power budget	Limited by power budget	Limited by power budget
I/O per remote channel	N/A	16,384 *(limited to 896)*	16,384 (16 fully expanded H4-EBC slaves using V-memory and bit-of-word instructions)	16,384 (16 fully expanded H4-EBC slaves using V-memory and bit-of-word instructions)	16,384 (16 fully expanded H4-EBC slaves using V-memory and bit-of-word instructions)
Performance					
Contact execution (boolean)	3.3µs	1.4µs	0.61µs	0.61µs	0.61µs
Typical scan (1K boolean)	4-6ms	10-12ms	2ms	1.9ms	1.9ms
Programming and Diagnostics					
RLL Ladder Style	Yes	Yes	Yes	Yes	yes
RLL*PLUS*/Flowchart Style (Stages)	Yes/256	Yes/512	Yes/1024	Yes/1024	Yes/1024
Run time editing	Yes	Yes	Yes	Yes	Yes
Variable/fixed scan	Variable	Variable	Variable	Variable	Variable
Instructions	113	129	172	174	231
Control relays	256	256	1024	1024	2048
Timers	64	128	256	256	256
Counters	64	128	128	128	256
Immediate I/O	Yes	Yes	Yes	Yes	Yes
Subroutines	No	Yes	Yes	Yes	Yes
For/Next loops	No	Yes	Yes	Yes	Yes
Timed Interrupt	No	Yes	Yes	Yes	Yes
Integer Math	Yes	Yes	Yes	Yes	Yes
Floating-point Math	No	No	Yes	Yes	Yes
Trigonometric functions	No	No	No	No	**Yes**
Table Instructions	No	No	No	No	**Yes**
PID	No	No	Yes, 4 Loops	Yes, 4 loops	**Yes, 16 loops**
Drum Sequencers	No	No	Yes	Yes	Yes
Bit of Word	No	No	Yes	Yes	Yes
ASCII Print	No	No	Yes	Yes	Yes
Real-time clock/calender	No	Yes	Yes	Yes	Yes
Internal diagnostics	Yes	Yes	Yes	Yes	Yes
Password security	Yes	Multi-level	Multi-level	Multi-level	Multi-level
System and user error log	No	No	Yes	Yes	Yes
Communications					
Built-in ports	Port 1 RS-232C	Port 1 RS-232C and Port 2 RS-232C	Port 1 RS-232C and Port 2 RS (232C/422)	Port 1 RS-232C and Port 2 RS (232C/422)	Port 1 RS-232C and Port 2 RS (232C/422/485)
K-sequence (proprietary protocol)	Yes	Yes	Yes	Yes	Yes
*Direct*NET™	No	Yes	Yes	Yes	Yes
MODBUS RTU master/slave	No	No	Yes	Yes	Yes
ASCII communications	No	No	OUT	OUT	**IN/OUT**
Maximum baud rate	9600	19.2K port 2	38.4K port 2	38.4K port 2	38.4K port 2

Replaced by D2-250-1

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D2-230/240 KEY FEATURES

DL240 CPU
D2-240

D2-240: our best value DL205 CPU

The D2-240 provides a subset of the D2-250-1's capabilities. If you need a good CPU, with multiple communications ports, and complex math or PID isn't required, then the D2-240 is the CPU for you!

Built-in memory

There is 2.5K of EEPROM program memory in the D2-240. No additional memory is required.

If you have critical data stored in the capacitor backed V-memory, simply purchase the optional lithium battery (D2-BAT) to permanently maintain these parameters as well.

Powerful instructions

The D2-240 instructions cover most of the capability of our more powerful D2-250-1 and allow you to cover a wide variety of applications. Instructions include boolean logic, data manipulation, integer math, interrupts, subroutines, FOR/NEXT loops, etc. For a complete list of instructions, see the back of this section.

Two built-in RS232C communications ports

The D2-240 offers two communication ports. The top port can be used for a direct connection to a personal computer for programming, to our handheld

programmer, EZTouch/EZText panels, or to the DV-1000. The bottom port is a slave-only port and supports our *Direct*NET™ or K-sequence protocol at speeds up to 19.2K baud. If you're using an operator interface or if you plan on connecting the system to a network later on, then you can choose the D2-240. The D2-240 also supports the D2-DCM Data Communication Module and the H2-ECOM Ethernet Communication Modules.

DL205 spare EEPROM chips

There may be cases where you want to have a spare EEPROM chip available. For example, maybe you need to upgrade a customer's machine with your latest enhancements. You can purchase extra EEPROM chips (two per pack). These can be installed in the CPU (D2-230/D2-240 only) and programmed, or they can be programmed directly with the DL205 handheld programmer.

CPU Side View

Write Protect Jumper

EEPROM

EEPROM location
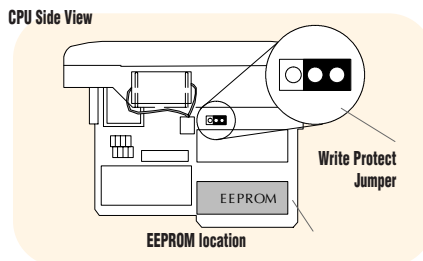
	D2-EE-1	D2-EE-2
CPU	D2-230	D2-240
CPU Program Storage Capacity	2.0K	2.4K
Writing Cycle Life	10,000	10,000
Write Inhibit	CPU jumper	CPU jumper
Memory Clear Method	Electrical	Electrical

DL230 CPU
D2-230

D2-230: our lowest price DL205 CPU

The D2-230 is our most economical CPU in the DL205 product family. If you are looking at the DL205 primarily because of the size or for other reasons that don't require lots of CPU horsepower, then give the D2-230 a try.

Built-in EEPROM memory

There is 2.0K of EEPROM program memory in the D2-230. No additional memory is required.

If you have critical data stored in the capacitor backed V-memory, simply purchase the optional lithium battery (D2-BAT) to permanently maintain these parameters as well.

One built-in communications port

The D2-230 has only one communication port. If you are considering any network connections in the future, you will need the D2-240, D2-250-1 or D2-260 CPU. The extra port may be worth the cost, especially during machine startup or troubleshooting sessions. The D2-230 does not support the Ethernet or Data Communications modules.
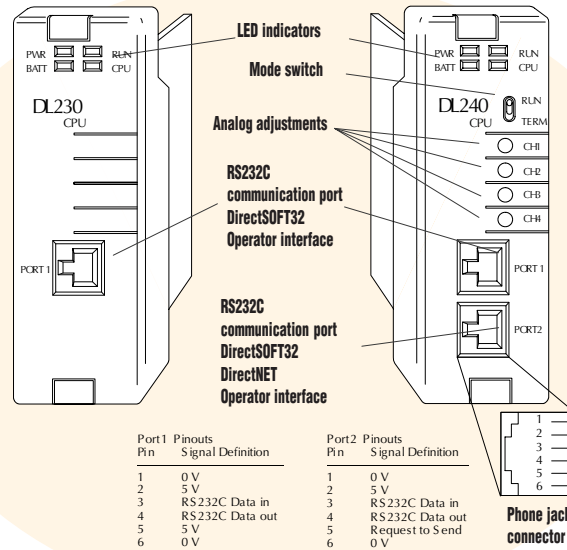
Basic instruction set

The D2-230 provides a subset of the D2-240's well-rounded instructions. The D2-230's instructions cover basic boolean and simple integer math.
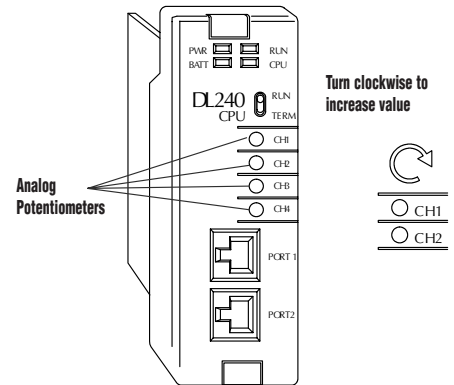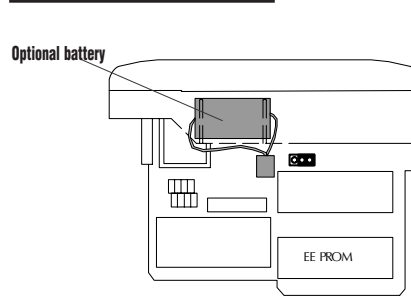
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D2-230/240 KEY FEATURES

The diagram to the right shows the various hardware features found on the D2-230 and D2-240 CPUs.

CPU Status Indicators		
RUN	ON	CPU is in RUN mode
	OFF	CPU is in PROGRAM mode
BATT	ON	Battery backup voltage is low
	OFF	Battery backup voltage is OK or disabled
CPU	ON	CPU internal diagnostics has detected an error
	OFF	CPU is OK
PWR	ON	CPU power good
	OFF	CPU power failure

Mode Switch (D2-240 only)	
RUN	Forces CPU into RUN Mode
TERM	Allows peripherals (HPP, *Direct*SOFT32) to select the mode of operation

Port 1	
Protocol	K-sequence slave
Devices	Can connect w/HPP, *Direct*SOFT32™, EZText/EZTouch, DV-1000,
Specs	6P6C phone jack connector RS232C, 9600 baud Odd parity Fixed station address (1) 8 data bits, one stop bit Asynchronous, half-duplex, DTE

Port 2 (D2-240 only)	
Protocol	K-sequence slave, *Direct*NET slave
Devices	Can connect many devices, *Direct*SOFT32, DSData, HMI packages, *Direct*Touch, DV-1000, EZTouch/EZText Panels, or any *Direct*NET master
Specs	6P6C phone jack connector 300/1200/9600/19.2K baud Odd parity or no parity Selectable address (1-90, HEX 1-5A) 8 data bits, one start, one stop bit Asynchronous, half-duplex, DTE

Battery (optional)
D2-BAT
Battery is not needed for program backup. However, you should order a battery if you have parameters in V-memory that must be maintained in case of a power outage.

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LED indicators

Mode switch

Analog adjustments

RS232C communication port *Direct*SOFT32 **Operator interface**

RS232C communication port *Direct*SOFT32 *Direct*NET **Operator interface**

Port 1 Pinouts	
Pin	Signal Definition
1	0 V
2	5 V
3	RS232C Data in
4	RS232C Data out
5	5 V
6	0 V

Port 2 Pinouts	
Pin	Signal Definition
1	0 V
2	5 V
3	RS232C Data in
4	RS232C Data out
5	Request to Send
6	0 V

Phone jack connector

CPU side view

Optional battery

EE PROM

Analog Potentiometers

Turn clockwise to increase value

Four external potentiometers for adjustments

There are four potentiometers on the face plate of the D2-240 CPU. They have a resolution of 256 steps and can be used to externally adjust four predefined V-memory locations inside the D2-240 CPU. You specify upper and lower limits for the values and the CPU takes care of the rest!