

# Reviewing PLC Capabilities

The following functionality tables (A, B and C) provide an overview of the capabilities of our various **DirectLOGIC** PLC families. When you have identified the type and quantity of I/O devices required by your application, the I/O Availability table shows you which family or families will meet those specifications.

## A I/O Availability Check the I/O types supported by the DirectLOGIC PLC families

		CAPACITY				DISCRETE												ANALOG											
DL Family	CPU/Device	Local I/O	Mix of I/O (inputs/outputs)	Total Possible I/O	DC In/Relay Out	DC In/DC Out	DC In/AC Out	AC In/Relay Out	AC In/DC Out	AC In/AC Out	DC Sink/Source In	DC Sink In	DC Source In	TTL In	DC Sink Out	DC Source Out	AC/DC In	AC In	AC Triac Out	AC/DC Relay Out	AC/DC Isol. Relay out	High Speed In	Pulse Out	Analog 4-20 In or Volt IN	Analog Isol. In	Analog 4-20 or Volt Isol.	Analog 4-20 Out or Volt	Temperature In	
DL05	D0-05DR(-D)	14	8 in/6 out	30	✓						✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
	D0-05DD(-D)	14	8 in/6 out	30		✓					✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
	D0-05DA	14	8 in/6 out	30			✓				✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
	D0-05AR	14	8 in/6 out	30				✓			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
	D0-05AD	14	8 in/6 out	30					✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
	D0-05AA	14	8 in/6 out	30						✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
DL06	D0-06DD1(-D)	36	20 in/16 out	100		✓					✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
	D0-06DD2(-D)	36	20 in/16 out	100		✓					✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
	D0-06DR(-D)	36	20 in/16 out	100	✓						✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
	D0-06AA	36	20 in/16 out	100						✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
	D0-06DA	36	20 in/16 out	100			✓				✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
	D0-06AR	36	20 in/16 out	100				✓			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
DL105	F1-130DR(-D)	18	10 in/8 out	18	✓																	✓							
	F1-130DD(-D)	18	10 in/8 out	18		✓																✓	✓						
	F1-130DA	18	10 in/8 out	18			✓															✓							
	F1-130AR	18	10 in/8 out	18				✓																					
	F1-130AD	18	10 in/8 out	18					✓														✓						
	F1-130AA	18	10 in/8 out	18						✓																			
DL205	D2-230	256	128 in/128 out	256	✓						✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	D2-240	256	any mix	896	✓						✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	D2-250(-1)	256	any mix	2048	✓						✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	D2-260	256	any mix	16,384	✓						✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
DL305	D3-330	168	any mix	168							✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	D3-340	168	any mix	184							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	D3-350	168	any mix	880							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
DL405	D4-430	640	320 in/320 out	1152							✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	D4-440(DC-1)	640	320 in/320 out	1664							✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	D4-440(DC-2)																												
	D4-450(DC-1)	2048*	1024 in/1024 out	16,384							✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
D4-450(DC-2)																													

\*1280 total local I/O if using 1 or more of the non "-1" bases (Example: D4-08B vs. D4-08B-1)

The Communications table lists all the supported protocols and which PLC can communicate using that protocol. You can also see which families support remote I/O, Ethernet communications and ASCII coprocessing. Many CPUs and our fixed I/O base units have communications ports built in. The DL205 family also has a wide variety of Fieldbus slave controllers to integrate our I/O with popular networks such as DeviceNet and Profibus.

# B

## Communications

Check the communications types supported by the DirectLOGIC PLC families

		CPU PORTS										SPECIALTY MODULES														
DL Family	CPU	K-Sequence Slave	DirectNet Master	DirectNet Slave	Modbus RTU Master	Modbus RTU Slave	ASCII Out (print)	ASCII IN/Out	RS485	Remote I/O Master	ETHERNET - 10 Mbit	ETHERNET - 100 Mbit	SDN	RS232	RS422	ASCII Basic Coprocessor	ETHERNET Remote I/O Master	ETHERNET Remote I/O Slave	Remote I/O Master	Remote I/O Slave	DirectNet Master/Slave	Modbus RTU Slave	DeviceNet Slave	Profibus Slave	SDS Slave	
DL05	All DL05 models	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓					✓	✓	✓	✓		
DL06	All DL06 models	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓					✓	✓	✓	✓		
DL105	F1-130DR(-D)	✓																					✓			
	F1-130DD(-D)	✓																					✓			
	F1-130DA	✓																								
	F1-130AR	✓																					✓			
	F1-130AD	✓																								
	F1-130AA	✓																								
DL205	D2-230	✓																								
	D2-240	✓		✓						✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*
	D2-250(-1)	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*
	D2-260	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*
DL305	D3-330			✓										✓	✓											
	D3-340		✓	✓		✓																				
	D3-350	✓	✓	✓	✓	✓	✓		✓					✓	✓						✓	✓				
DL405	D4-430	✓		✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	D4-440(DC-1)	✓		✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	D4-440(DC-2)	✓		✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	D4-450(DC-1)	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
D4-450(DC-2)	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			

\* These slave modules take the place of a DL205 CPU in any DL205 base populated with I/O, for use with Fieldbus networks.

The Programming table provides a listing of the major program functions. It also shows the amount of memory and instruction capability for each CPU. The programming descriptions below explain the various programming tools that can be used to configure the CPUs.

## C Programming

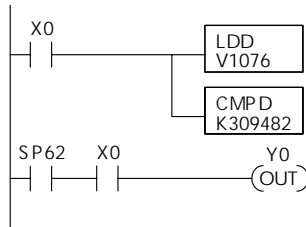
Check the programming instructions supported by the DirectLOGIC PLC families

DL Family	CPU	INSTRUCTIONS																TOOLS				
		Total Memory	Max. Instructions	Max. Variables	Battery Backup	Run-Time Edit	RLL Plus	Control Relays	Timer/Counters	Immediate I/O	Drums	Subroutines	For/Next Loops	Floating Point Math	PID	Clock/Calendar	Trigonometric Instructions	IBox instructions**	Full Program PC-DSOFT5	Handheld Programmer		
<b>DL05</b>	All DL05 models	6.0K	2048	4096	✓*	✓	✓	512	128/128	✓	✓	✓	✓	✓	✓	✓*	✓	✓	✓	✓		
<b>DL06</b>	All DL06 models	14.8K	7.5K	7.3K	✓	✓	✓	1024	256/128	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
<b>DL105</b>	All DL105 models	2.4K	2048	256		✓	✓	256	64/64	✓	✓								✓	✓		
<b>DL205</b>	D2-230	2.4K	2048	384	✓	✓	✓	256	64/64	✓									✓	✓		
	D2-240	3.8K	2560	1280	✓	✓	✓	256	128/128	✓		✓	✓			✓			✓	✓		
	D2-250(-1)	14.8K	7680	7168	✓	✓	✓	1024	256/128	✓	✓	✓	✓	✓	✓	✓			✓	✓		
	D2-260	30.4K	15.8K	14.6K	✓	✓	✓	2048	256/256	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
<b>DL305</b>	D3-330	3.8K	3.7K	128	✓			140	64											✓	✓	
	D3-340	3.9K	3.7K	192	✓			196	64												✓	✓
	D3-350	14.8K	7680	7168	✓	✓	✓	1024	256/128	✓	✓	✓	✓	✓	✓	✓				✓	✓	
<b>DL405</b>	D4-430	6.5K	3.5K	3.0K	✓	✓	✓	480	128/128	✓		✓	✓								✓	✓
	D4-440(DC-1) D4-440(DC-2)	22.5K	15.5K*	7.0K	✓	✓	✓	1024	256/128	✓		✓	✓			✓					✓	✓
	D4-450(DC-1) D4-450(DC-2)	30.8K	15.5K*	15.3K	✓	✓	✓	2048	256/256	✓	✓	✓	✓	✓	✓	✓					✓	✓

\* Requires memory card \*\* with supporting firmware

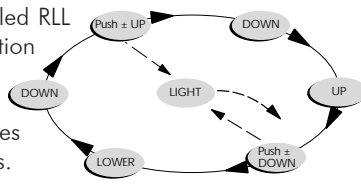
### Standard RLL programming

RLL (relay ladder logic) diagram-style programming is the best tool for solving boolean logic and general CPU register/accumulator manipulation. It includes dozens of instructions, which will augment drums, stages, and loops.



### Stage programming

Stage programming (also called RLL Plus) is based on state-transition diagrams. Stages divide the ladder program into sections which correspond to the states in a flow chart of your process.



### IBox instructions

IBoxes (Intelligent Box Instructions) are parameterized 'fill-in-the-blank' style instructions that allow you to enter various parameters into a control box to configure your code. This easy style of programming eliminates the need for potentially lengthy rungs of ladder code. IBoxes create the ladder code and execute it in the background so you never have to see it.

### PID loop operation

The PID loop operation uses setup tables to configure the loops. Features include: auto tuning, alarms, SP ramp/soak generation, and more.

