Fixed Controller Specifications

This section provides the specifications for the SLC 500 Fixed Controller.

Description	Specification
Memory Type	Capacitor–backed RAM memory. Battery back–up optional.
Memory Backup Options	EEPROM or UVPROM
Program Memory	1K Instruction Capacity
Capacitor Memory Back–up Time	Refer to curve on page 1–4.
Battery Life	5 years
Typical Scan Time①	8 milliseconds/1K
Bit Execution (XIC)	4 microseconds
Program Scan Hold–up Time after Loss of Power	20 milliseconds to 700 milliseconds (dependent on loading)
Power Supply Operating Voltage	AC units: 85–265 VAC 47–63 Hz DC units: 21.6–26.4 VDC (24 VDC ± 10%)
Power Supply Fuse Protection	AC units: 120/240 VAC 1.25A DC units: 24 VDC 1.6A
Power Supply Inrush Rating	30 Amperes maximum
Maximum Power Requirement	50 VA②
24 VDC User Power Output Current③	200mA
24 VDC User Power Output Voltage③	20.4 – 27.6 VDC (24 VDC ± 15 %)
Wire Size	#14 AWG Max.
I/O Electrical–Optical Isolation	1500 VAC at 1 minute
1747–AIC Link Coupler Electrical–Optical Isolation	1500 VDC
LED Indicators	POWER, PC RUN, CPU FAULT, FORCED I/O, and BATTERY LOW
Noise Immunity	NEMA Standard ICS 2–230
Ambient Temperature Rating	Operating: 0°C to +60°C (+32°F to +140°F) Storage: –40°C to +85°C (–40°F to +185°F)
Humidity	5 to 95% without condensation
Vibration	Displacement: .015 inch, peak–to–peak @ 5–57 Hz
	Acceleration: 2.5 Gs @ 57–2000 Hz
	Duration: 1 hr per axis (x, y, z)
Certification	UL listed/ CSA approved

① *The scan times are typical for a 1K ladder logic program consisting of simple ladder logic and communication servicing. Actual scan times depend on your program size, instructions used, and the DH–485 communication.*

② *This specification does not include input and output values. (See page 1–6.)*

③ *This applies only to fixed controllers that have AC line power and DC input circuits.*

Configuration Options

The following table provides configuration options for 20, 30, or 40 I/O points.

Catalog Number	Line Power	I/O Configuration		High–Speed Counter	User Power
		Input	Output		
1747–L20A	120/240 VAC	(12) 120 Volts AC	(8) AC/DC Relay	No	NA
1747–L30A		(18) 120 Volts AC	(12) AC/DC Relay	No	NA
1747–L40A		(24) 120 Volts AC	(16) AC/DC Relay	No	NA
1747–L20B		(12) 120 Volts AC	(8) AC Triac	No	NA
1747–L30B		(18) 120 Volts AC	(12) AC Triac	No	NA
1747–L40B		(24) 120 Volts AC	(16) AC Triac	No	NA
1747–L20C		(12) 24 Volts DC Sink	(8) AC/DC Relay	Yes	24V–200mA
1747–L30C		(18) 24 Volts DC Sink	(12) AC/DC Relay	Yes	24V–200mA
1747–L40C		(24) 24 Volts DC Sink	(16) AC/DC Relay	Yes	24V–200mA
1747–L20D		(12) 24 Volts DC Sink	(8) AC Triac	Yes	24V–200mA
1747–L30D		(18) 24 Volts DC Sink	(12) AC Triac	Yes	24V–200mA
1747–L20E		(12) 24 Volts DC Sink	(8) DC Transistor Source	Yes	24V–200mA
1747–L40E		(24) 24 Volts DC Sink	(16) DC Transistor Source	Yes	24V–200mA
1747–L20L		(12) 24 Volts DC Source	(8) DC Transistor Sink	Yes	24V–200mA
1747–L30L		(18) 24 Volts DC Source	(12) DC Transistor Sink	Yes	24V–200mA
1747–L40L		(24) 24 Volts DC Source	(16) DC Transistor Sink	Yes	24V–200mA
1747–L20R		(12) 240 Volts AC	(8) AC/DC Relay	No	NA
1747–L20P		(12) 240 Volts AC	(8) AC Triac	No	NA
1747–L30P		(18) 240 Volts AC	(12) AC Triac	No	NA
1747–L40P		(24) 240 Volts AC	(16) AC Triac	No	NA
1747–L20F	24 VDC± 10%	(12) 24 Volts DC Sink	(8) AC/DC Relay	Yes	NA
1747–L40F		(24) 24 Volts DC Sink	(16) AC/DC Relay	Yes	NA
1747–L20G		(12) 24 Volts DC Sink	(8) DC Transistor Source	Yes	NA
1747–L20N		(12) 24 Volts DC Source	(8) DC Transistor Sink	Yes	NA

Input Specifications

The following table details the input specifications for SLC 500 Fixed I/O units. See the glossary for a definition of specifications.

Inputs	Specifications	
120 VAC	On–State Voltage	85–132 VAC
	Frequency	47–63 Hz
	Off–State Voltage	30 VAC (maximum)
	Inrush Current	0.8A peak
	Nominal Input Current	12mA at 120 VAC
	Turn–On Time	35 milliseconds (maximum)
	Turn–Off Time	45 milliseconds (maximum)
	Maximum Off–State Current	2mA
240 VAC	On–State Voltage	170–265 VAC
	Frequency	47–63 Hz
	Off–State Voltage	50 VAC (maximum)
	Inrush Current	1.6A peak
	Nominal Input Current	12mA at 240 VAC
	Turn–On Time	35 milliseconds (maximum)
	Turn–Off Time	45 milliseconds (maximum)
	Maximum Off–State Current	2mA
DC Sink & Source	On–State Voltage	10–30 VDC
	Off–State Voltage	4 VDC maximum for input 0 (HSC) 5 VDC for all others
	Nominal Input Current	20mA at 24 VDC (for input 0 only) 8mA at 24 VDC (all others inputs)
	Turn–On Time	8 milliseconds (maximum)
	Turn–Off Time	8 milliseconds (maximum)
	Maximum Off–State Current	1mA

Output Specifications

The following table details the output specifications for SLC 500 Fixed I/O Units.

Outputs	Specifications	
Triac	Output Voltage	85–265 VAC
	Continuous Current (per output)	0.5 Amp at +30°C 0.25 Amp at +60°C (maximum)
	Minimum Load Current	10mA
	Turn–On Time	0.1 milliseconds (maximum)
	Turn–Off Time	10 milliseconds (maximum)
	Maximum Off–State Leakage Current	2mA
	Maximum On–State Voltage Drop	1.5V @ 0.5 Amps
	Maximum Surge Current	10 Amps for 25 milliseconds①
Transistor Sink & Source	Output Voltage	10–50 VDC
	Continuous Current (per output)	0.5 Amp at +30°C 0.25 Amp at +60°C (maximum)
	Minimum Load Current	1mA
	Turn–On Time	0.1 millisecond (maximum)
	Turn–Off Time	1 millisecond (maximum)
	Maximum Off–State Leakage Current	1mA
	Maximum On–State Voltage Drop	1.5V @ 0.5 Amps
	Maximum Surge Current	3.0 Amps for 25 milliseconds①
Relay③	Output Voltage Range	5–265 VAC, 5–125 VDC
	Continuous Current (per output)	2.5 Amps (maximum)
	Continuous Current (per group)②	8 Amps (maximum)
	Maximum Load (per chassis)	1440 VA
	Turn–On Time	10 milliseconds (maximum)
	Turn–Off Time	10 milliseconds (maximum)
	Maximum Off–State Leakage Current	0mA
	Minimum Load Current at 5 VDC	10mA

① *Repeatability is once every 1 second at +30°C. Repeatability is once every 2 seconds at +60°C.*

② *Refer to the wiring diagrams for output groupings on the fixed I/O chassis.*

③ *Surge suppression across the output device is recommended to protect relay contacts.*

Relay Contact Ratings

Maximum Volts	Amperes Make	Amperes Break	Amperes Continuous	Voltamperes Make	Voltamperes Break
240 VAC 120 VAC	7.5A 15A	0.75A 1.5A	2.5A	1800 VA	180 VA
125 VDC	0.22A		1.0A	28 VA	
24 VDC	1.2A		2.0A	28 VA	

To calculate make and break ratings for other load voltages, divide the voltampere rating by the load voltage; for example:

28 VA/48 VDC = 0.583 A

Selecting the 2–Slot Chassis

For the 20, 30, and 40 I/O fixed controllers, an optional 2–slot expansion chassis lets you add two additional I/O modules providing even more versatility. The power supply provides backplane power for the modules in the optional expansion chassis.

Refer to chapter 3 for chassis dimensions and chapter 4 for mounting directions.

Selecting Discrete I/O Modules

There are three types of I/O modules: input, output, and combination I/O. They are available in a wide variety of densities including 4, 8, 16, and 32 point and can interface to AC, DC, and TTL voltage levels. Output modules are available with solid–state AC, solid–state DC, and relay contact type outputs.

For a complete, up–to–date listing of discrete I/O modules and their specifications, contact your Allen–Bradley sales office for the latest product data entitled *Discrete Input and Output Modules*, Publication Number 1746–2.35.

Refer to chapter 4 for installation directions.

Selecting Speciality I/O Modules

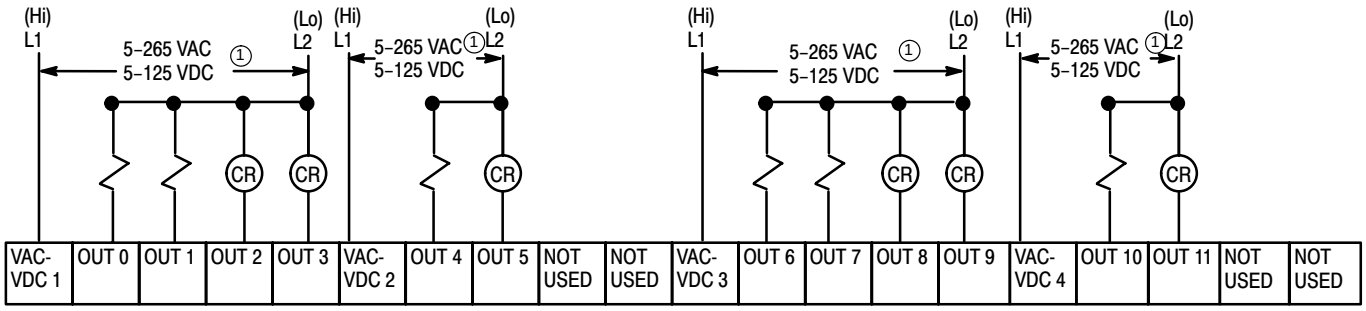
The SLC 500 family offers specialty I/O modules that enhance your control system. These modules range in function from analog interface to motion control, from communication to high–speed counting.

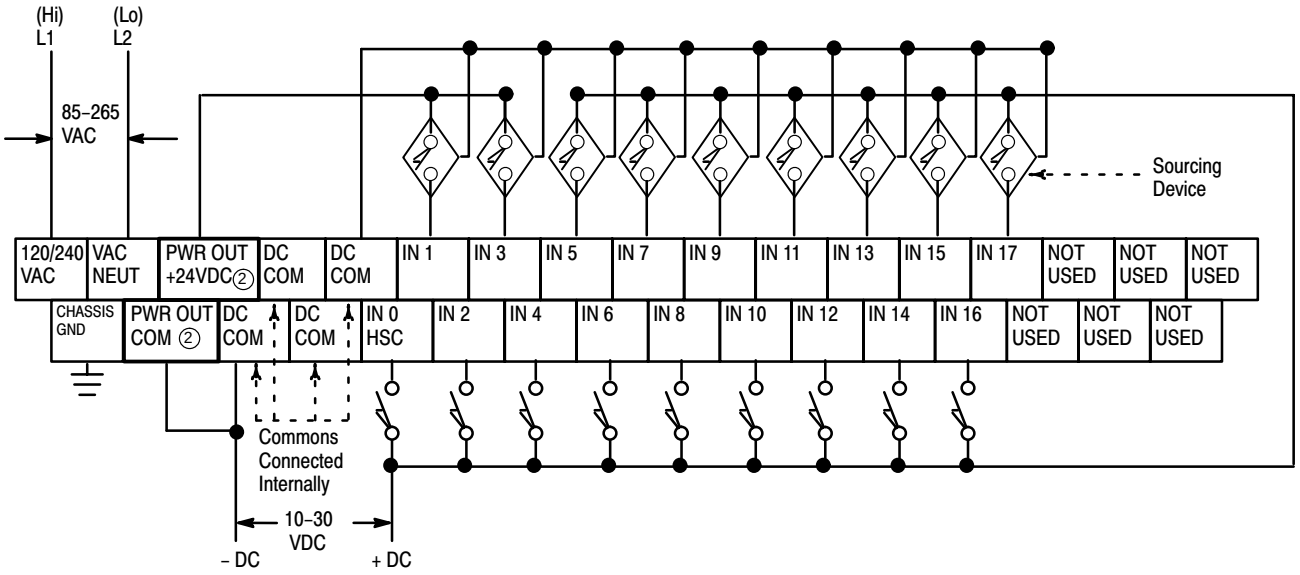
For a complete, up–to–date listing of specialty I/O modules and their specifications, contact your Allen–Bradley sales office for the latest System Overview entitled *SLC 500 Family of Small Programmable Controllers*, Publication Number 1747–2.30, or for a related product data.

Refer to chapter 4 for installation directions.

Catalog Number 1747–L30C (18) 24 VDC Sinking Inputs, High–Speed Counter Input & (12) Relay Outputs

Wiring Diagram

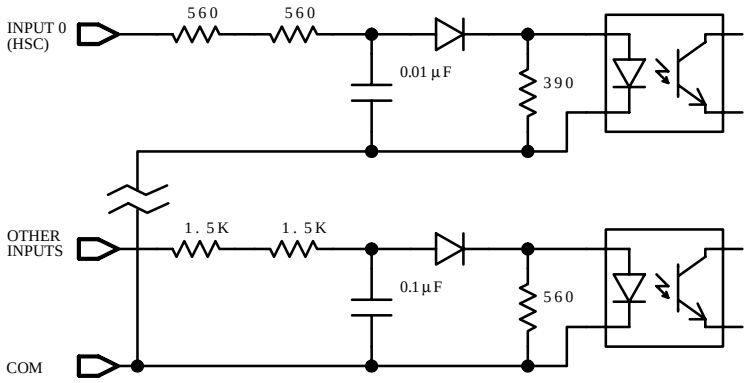




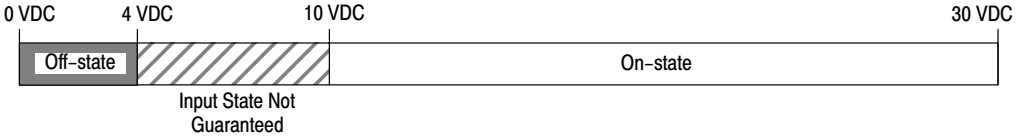
① *The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.*

② *24 VDC, 200mA user power is available for sensors.*

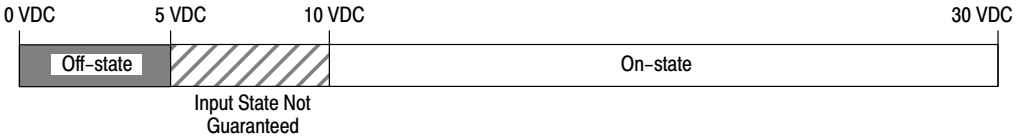
Input Circuit Diagram



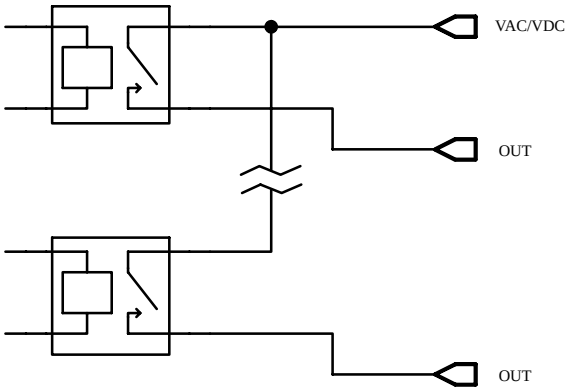
On/Off State Voltage Ranges – Input 0 (HSC)



On/Off State Voltage Ranges – All Other Inputs



Output Circuit Diagram



Operating Voltage Range

