Allen-Bradley

SLC 500™ Fixed Hardware Style

(Cat. No. 1747-L20, 1747-L30, and 1747-L40 Processors)

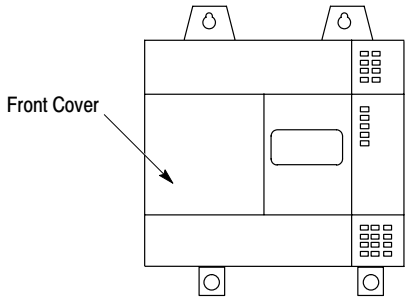
product icon

Installation and Operation Manual

Safety Considerations

Safety considerations are an important element of proper system installation. Actively thinking about the safety of yourself and others, as well as the condition of your equipment, is of primary importance. Several safety areas are discussed below.

High Voltages – SLC 500 Fixed Hardware Style Controller (Series C) (Applies to 1747–L20A, –L30A, –L40A, –L20C, –L30C, and –L40C controllers)



ATTENTION: The printed circuit board, located under the front cover of Series C Fixed Hardware Style Controllers, has high voltages (120 VAC and 240 VAC) available at certain points when the controller is powered up. If the front cover is removed, exercise extreme care and consider all points on the circuit board to be electrically hazardous. Therefore, whenever possible, turn off power to the controller before removing the front cover. *Do not* remove the protective insulation covering the circuit board. Cutouts in the insulation are provided to allow access to the high–speed counter jumper, memory module, and battery connector. If the insulation is missing, do not touch any portion of the circuit board. Failure to heed this warning may result in personal injury or death.

Disconnecting Main Power

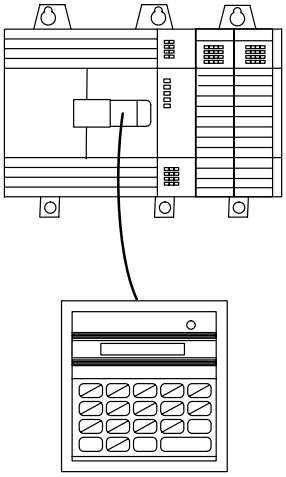
The main power disconnect switch should be located where operators and maintenance personnel have quick and easy access to it. Ideally, the disconnect switch is mounted on the outside of the enclosure, so that it can be accessed without opening the enclosure. In addition to disconnecting electrical power, all other sources of power (pneumatic and hydraulic) should be de–energized before working on a machine or process controlled by an SLC controller.

Use this Table to Calculate the Power Supply Loading

Use the table below to calculate the power supply loading for each chassis that you have (step 1 of the worksheet).

Hardware Component	Catalog Numbers	Watts per Point	Minimum Watts	Maximum Watts
Fixed Controllers	1747–L20A	0.27	10.5	15.0
	1747–L30A	0.27	12.7	19.2
	1747–L40A	0.27	14.3	23.0
	1747–L20B	0.27	9.9	17.0
	1747–L30B	0.27	11.6	22.0
	1747–L40B	0.27	13.0	27.0
	1747–L20C	0.20	17.4	21.0
	1747–L30C	0.20	18.7	24.0
	1747–L40C	0.20	19.9	27.0
	1747–L20D	0.20	12.4	19.0
	1747–L30D	0.20	13.9	23.0
	1747–L20E	0.20	12.6	18.0
	1747–L40E	0.20	16.0	27.0
	1747–L20F	0.20	5.0	9.0
	1747–L40F	0.20	7.4	15.0
	1747–L20G	0.20	4.4	10.0
	1747–L20L	0.20	12.1	18.0
	1747–L30L	0.20	14.0	23.0
	1747–L40L	0.20	16.0	27.0
	1747–L20N	0.20	4.4	10.0
	1747–L20P	0.35	8.8	17.0
	1747–L30P	0.35	10.5	23.0
	1747–L40P	0.35	11.6	28.0
	1747–L20R	0.35	10.5	16.0
Input Modules	1746–IA4	0.27	0.175	1.30
	1746–IA8	0.27	0.250	2.40
	1746–IA16	0.27	0.425	4.80
	1746–IM4	0.35	0.175	1.60
	1746–IM8	0.35	0.250	3.10
	1746–IM16	0.35	0.425	6.00
	1746–IB8	0.20	0.250	1.90
	1746–IB16	0.20	0.425	3.60
	1746–IB32	0.20	0.530	6.90
	1746–IV8	0.20	0.250	1.90
	1746–IV16	0.20	0.425	3.60
	1746–IV32	0.20	0.530	6.90
	1746–IG16	0.020	0.700	1.00
	1746–IN16	0.35	0.425	6.00
Output Modules	1746–OA8	1.00	0.925	9.00
	1746–OA16	0.462	1.85	9.30
	1746–OB8	0.775	0.675	6.90
	1746–OB16	0.338	1.40	7.60
	1746–OB32	0.078	2.26	4.80
	1746–OV8	0.775	0.675	6.90

Example Heat Dissipation Calculation



If your controller consisted of the following hardware components, you would calculate heat dissipation as shown in the *example* worksheet below.

Hardware Components	Catalog Number	Minimum Watts	Maximum Watts
Fixed Controller	1747–L20A	10.5	15.0
Input Module	1746–IA16	0.425	4.8
Output Module	1746–OA16	1.85	9.3
Peripheral Device	1747–DTAM	2.5	2.5

Example Worksheet for Calculating Heat Dissipation

Procedure	Heat Dissipation
1. Calculate the *heat dissipation* for your fixed controller. Write in the watts (calculated watts or maximum watts, see page D–1) dissipated by the controller, I/O and specialty modules, and peripheral device attached to the controller. Add these values together. Catalog Number / Heat Dissipation Fixed Controller _____ _____ Expansion Chassis Slot 1 (if applicable) _____ _____ Slot 2 (if applicable) _____ _____ Peripheral Device _____ _____ Total: _____ *Place Total on this Line* --->	_____ **W**
2. Convert to BTUs/hr. Multiply the total heat dissipation of your SLC 500 fixed control system by 3.414.	x 3.414

Total heat dissipation of the SLC 500 control system: _____ **BTUs/hr**

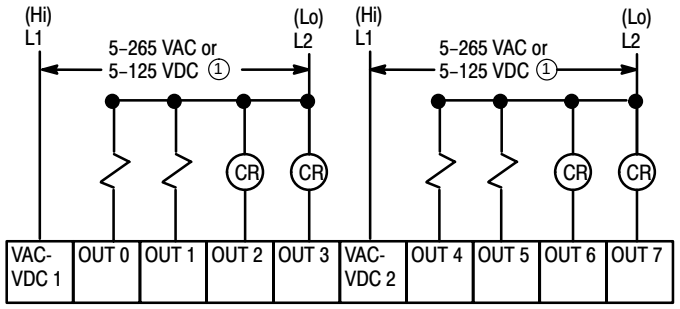
Wiring and Circuit Diagrams and Voltage Range Locations

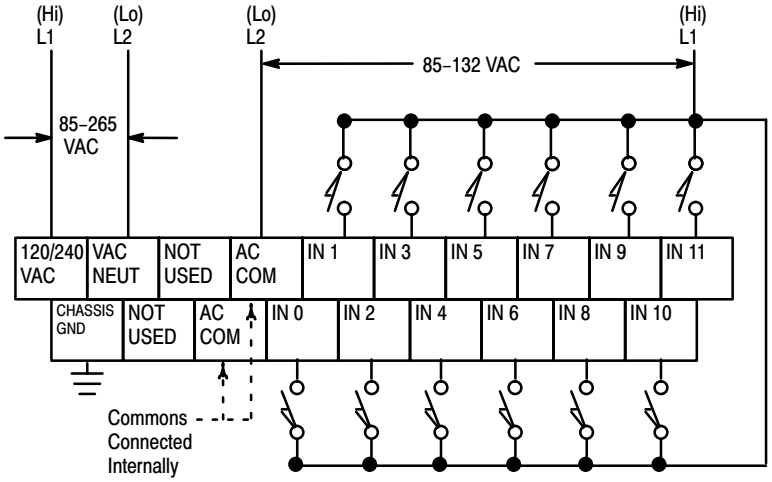
Use the table below to locate the appropriate wiring and circuit diagrams and voltage ranges.

Catalog Numbers	Description[1]	Wiring Diagram	Input Circuit Diagram	On/Off State Voltage	Output Circuit Diagram	Operating Voltage Range
1747–L20A	(12) 120 VAC Inputs and (8) Relay Outputs	E–4	E–5	E–5	E–5	E–5
1747–L20B	(12) 120 VAC Inputs and (8) Triac Outputs	E–6	E–7	E–7	E–7	E–7
1747–L20C	(12) 24 VDC Sinking Inputs, High–Speed Counter Input and (8) Relay Outputs	E–8	E–9	E–9	E–10	E–10
1747–L20D	(12) 24 VDC Sinking Inputs, High–Speed Counter Input and (8) Triac Outputs	E–11	E–12	E–12	E–13	E–13
1747–L20E	(12) 24 VDC Sinking Inputs, High–Speed Counter Input and (8) Transistor Sourcing Outputs	E–14	E–15	E–15	E–16	E–16
1747–L20F	(12) 24 VDC Sinking Inputs, High–Speed Counter Input and (8) Relay Outputs	E–17	E–18	E–18	E–19	E–19
1747–L20G	(12) 24 VDC Sinking Inputs, High–Speed Counter Input and (8) Transistor Sourcing Outputs	E–20	E–21	E–21	E–22	E–22
1747–L20L	(12) 24 VDC Sourcing Inputs, High–Speed Counter Input and (8) Transistor Sinking Outputs	E–23	E–24	E–24	E–25	E–25
1747–L20N	(12) 24 VDC Sourcing Inputs, High–Speed Counter Input and (8) Transistor Sinking Outputs	E–26	E–27	E–27	E–28	E–28
1747–L20P	(12) 240 VAC Inputs and (8) Triac Outputs	E–29	E–30	E–30	E–30	E–30
1747–L20R	(12) 240 VAC Inputs and (8) Relay Outputs	E–31	E–32	E–32	E–32	E–32
1747–L30A	(18) 120 VAC Inputs and (12) Relay Outputs	E–33	E–34	E–34	E–34	E–34
1747–L30B	(18) 120 VAC Inputs and (12) Triac Outputs	E–35	E–36	E–36	E–36	E–36
1747–L30C	(18) 24 VDC Sinking Inputs, High–Speed Counter Input and (12) Relay Outputs	E–37	E–38	E–38	E–39	E–39
1747–L30D	(18) 24 VDC Sinking Inputs, High–Speed Counter Input and (12) Triac Outputs	E–40	E–41	E–41	E–42	E–42
1747–L30L	(18) 24 VDC Sourcing Inputs, High–Speed Counter Input and (12) Transistor Sinking Outputs	E–43	E–44	E–44	E–45	E–45
1747–L30P	(18) 240 VAC Inputs and (12) Triac Outputs	E–46	E–47	E–47	E–47	E–47
1747–L40A	(24) 120 VAC Inputs and (16) Relay Outputs	E–48	E–49	E–49	E–49	E–49

Catalog Number 1747–L20A (12) 120 VAC Inputs & (8) 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.*