

Discrete I/O Module Summary

	ID Code	Voltage Category	Catalog Number	Input/Output	I/O Points	Module Description	Page
AC Modules	100	100/120V ac	1746-IA4	Input	4	120V ac Input	15
	300	100/120V ac	1746-IA8	Input	8	120V ac Input	15
	500	100/120V ac	1746-IA16	Input	16	120V ac Input	15
	101	200/240V ac	1746-IM4	Input	4	240V ac Input	15
	301	200/240V ac	1746-IM8	Input	8	240V ac Input	15
	501	200/240V ac	1746-IM16	Input	16	240V ac Input	15
	2703	100/120V ac	1746-OA8	Output	8	120/240V ac Output	17
	2903	100/120V ac	1746-OA16	Output	16	120/240V ac Output	17
	2803	120/240V ac	1746-OAP12⁽¹⁾	Output	12	High Current 120/240V ac Output	17
DC Modules	306	24V dc	1746-IB8	Input	8	Current Sinking DC Input	19
	506	24V dc	1746-IB16	Input	16	Current Sinking DC Input	19
	706	24V dc	1746-IB32⁽¹⁾	Input	32	Current Sinking DC Input	19
	519	24V dc	1746-ITB16	Input	16	Fast Response DC Sinking Input	19
	509	48V dc	1746-IC16	Input	16	Current Sinking DC Input	22
	507	125V dc	1746-IH16	Input	16	Current Sinking DC Input	22
	320	24V dc	1746-IV8	Input	8	Current Sourcing DC Input	22
	520	24V dc	1746-IV16	Input	16	Current Sourcing DC Input	22
	720	24V dc	1746-IV32⁽¹⁾	Input	32	Current Sourcing DC Input	22
	518	24V dc	1746-ITV16	Input	16	Fast Response DC Sourcing Input	22
	515	5V dc/TTL	1746-IG16⁽²⁾	Input	16	Current Sourcing TTL Input	27
	2619	24V dc	1746-OB6EI	Output	6	Isolated Sourcing DC Output	31
	2713	24V dc	1746-OB8	Output	8	Current Sourcing DC Output	28
	2913	24V dc	1746-OB16	Output	16	Current Sourcing DC Output	28
	2920	24V dc	1746-OB16E⁽¹⁾⁽³⁾	Output	16	Current Sourcing DC Output	31
	3113	24V dc	1746-OB32⁽¹⁾	Output	32	Current Sourcing DC Output	28
	3120	24V dc	1746-OB32E⁽¹⁾	Output	32	Current Sourcing DC Output	31
	2721	24V dc	1746-OBP8⁽³⁾	Output	8	High Current Sourcing DC Output	31
	2921	24V dc	1746-OBP16⁽¹⁾	Output	16	High Current Sourcing DC Output	35
	2714	24V dc	1746-OV8	Output	8	Current Sinking DC Output	37
	2914	24V dc	1746-OV16	Output	16	Current Sinking DC Output	37
	3114	24V dc	1746-OV32⁽¹⁾	Output	32	Current Sinking DC Output	37
	2922	24V dc	1746-OVP16⁽¹⁾	Output	16	High Current Sinking DC Output	40
	2915	5V dc/TTL	1746-OG16⁽²⁾	Output	16	Current Sinking TTL Output	41
AC/DC Modules	510	24V ac/dc	1746-IN16	Input	16	24V ac/dc Input	42
	2500	AC/DC Relay	1746-OW4⁽¹⁾	Output	4	Relay (Hard Contact) Output	43
	2700	AC/DC Relay	1746-OW8⁽¹⁾	Output	8	Relay (Hard Contact) Output	43
	2900	AC/DC Relay	1746-OW16⁽¹⁾	Output	16	Relay (Hard Contact) Output	43
	2701	AC/DC Relay	1746-OX8⁽¹⁾	Output	8	Isolated Relay Output	43
	800	In - 120V ac, Out - Relay	1746-IO4⁽¹⁾	Input/Output	2 In, 2 Out	Combination Input/Output	45
	1100	In - 120V ac, Out - Relay	1746-IO8⁽¹⁾	Input/Output	4 In, 4 Out	Combination Input/Output	45
	1500	In - 120V ac, Out - Relay	1746-IO12⁽¹⁾	Input/Output	6 In, 6 Out	Combination Input/Output	45
	1512	In - 24V dc, Out - Relay	1746-IO12DC⁽³⁾	Input/Output	6 In, 6 Out	Combination Input/Output	45

(1) Certified for Class 1, Division 2 hazardous location by CSA only.

(2) Not CE marked.

(3) These modules carry the C-UL mark and are certified by UL per CSA only.

Sourcing DC Output Modules (1746-OB8, -OB16, -OB32)

Specification		Catalog Number		
		1746-OB8	1746-OB16 (RTB)	1746-OB32 Series D ⁽¹⁾
Voltage Category		24V dc		
Operating Voltage		10 to 50V dc source		
Number of Outputs		8	16	32
Points per Common		8	16	16
Backplane Current Draw	5V dc	0.135A	0.280A	0.190A
	24V dc	0.0A	0.0A	0.0A
Signal Delay (max.) (Resistive Load)		on = 0.1 ms off = 1.0 ms	on = 0.1 ms off = 1.0 ms	on = 0.1 ms off = 1.0 ms
Off-State Leakage ⁽²⁾ (max.)		1 mA		
Load Current (min.)		1 mA		
Continuous Current (max.)	Per Point ⁽³⁾	1A at 30°C 0.50A at 60°C	0.50A at 30°C 0.25A at 60°C	0.5A at 30°C 0.25A at 60°C
	Per Module	8A at 30°C 4A at 60°C	8A at 30°C 4A at 60°C	8A at 0 to 60°C 4A at 0 to 60°C per common ⁽⁴⁾ 2A at 0 to 60°C per common pin
On-State Voltage Drop (max.)		1.2V at 1.0A	1.2V at 0.5A	1.2V at 0.5A
Surge Current ⁽⁵⁾ (max.)		3A for 10 ms	3A for 10 ms	1A for 10 ms

(1) Series A, B, and C 32-point output modules are fused to protect external wiring, one fuse per common. These fuses are non-replaceable and are rated at 2.5A. Series D modules are not fused and have a higher current rating than Series A, B, and C.

(2) To limit the effects of leakage current, a loading resistor can be connected in parallel with your load. For 24V dc operation use a 5.6k ohm, ½W resistor.

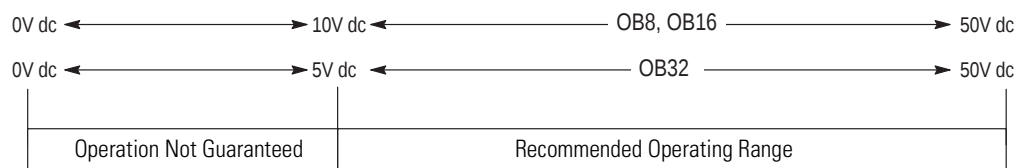
(3) Recommended surge suppression for switching 24V dc inductive loads is a 1N4004 diode that is reverse wired across the load. See page 6 for more information on surge suppression.

(4) To attain the maximum Continuous Current per common rating of 4A for an OB32 Series D module, both V dc connections in a wire group must be connected to your DC source.

(5) Repeatability is once every second at 30°C. Repeatability is once every 2 seconds at 60°C.

RTB = Removable Terminal Block.

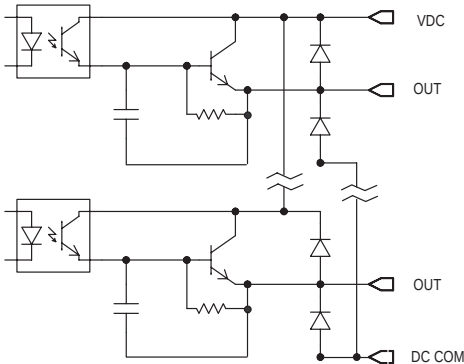
Operating Voltage Range



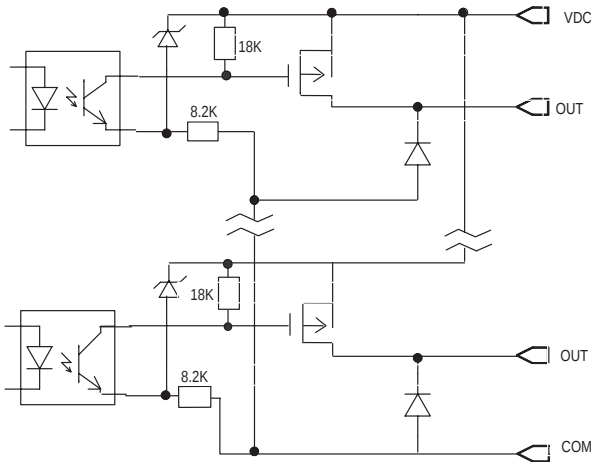
(Voltage is applied between +VDC and DC common.)

Circuit Diagrams

1746-OB8, OB16

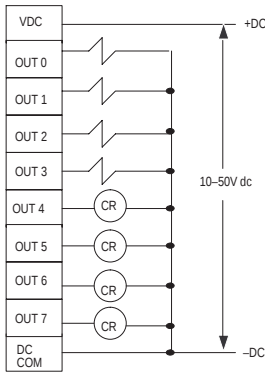


1746-OB32

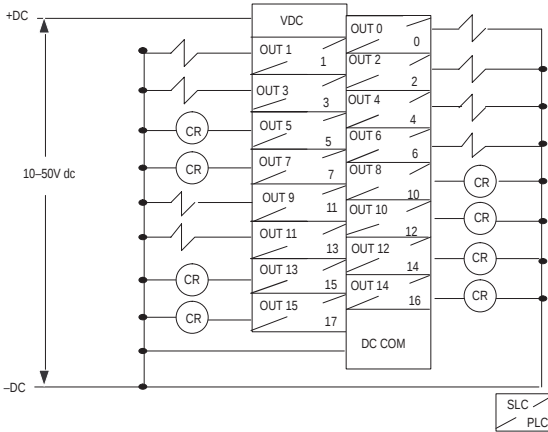


Wiring Diagrams

1746-OB8
10-50V dc TRANSISTOR OUTPUT
SOURCING



1746-OB16
10-50V dc TRANSISTOR OUTPUT, SOURCING



Power Supply Loading

Hardware Components	Catalog Number	Maximum Current at 5V dc (Amps)	Maximum Current at 24V dc (Amps)	Hardware Component	Catalog Number	Maximum Current at 5V dc (Amps)	Maximum Current at 24V dc (Amps)
Discrete Input Modules	1746-IA4	0.035	0	Discrete Output Modules	1746-OA8	0.185	0
	1746-IA8	0.050	0		1746-OA16	0.370	0
	1746-IA16	0.085	0		1746-OAP12	0.370	0
	1746-IB8	0.050	0		1746-OB6EI	0.046	0
	1746-IB16	0.085	0		1746-OB8	0.135	0
	1746-IB32	0.050	0		1746-OB16	0.280	0
	1746-IC16	0.085	0		1746-OB16E	0.135	0
	1746-IG16	0.140	0		1746-OB32	0.190	0
	1746-IH16	0.085	0		1746-OB32E	0.190	0
	1746-IM4	0.035	0		1746-OBP8	0.135	0
	1746-IM8	0.050	0		1746-OBP16	0.250	0
	1746-IM16	0.085	0		1746-OG16	0.180	0
	1746-IN16	0.085	0		1746-OV8	0.135	0
	1746-ITB16	0.085	0		1746-OV16	0.270	0
	1746-ITV16	0.085	0		1746-OV32	0.190	0
	1746-IV8	0.050	0		1746-OVP16	0.250	0
	1746-IV16	0.085	0		1746-OW4	0.045	0.045
	1746-IV32	0.050	0		1746-OW8	0.085	0.090
					1746-OW16	0.170	0.180
					1746-OX8	0.085	0.090
Discrete Input and Output Modules	1746-IO4	0.030	0.025				
	1746-IO8	0.060	0.045				
	1746-IO12	0.090	0.070				
	1746-IO12DC	0.080	0.060				

Discrete I/O Power Dissipation

The table below lists the power dissipation for the discrete I/O modules operating at nominal voltage. The following terms are used in the Power Dissipation table:

Watts per Point	Minimum Watts	Total Watts
The heat dissipation that can occur in each field wiring point when energized at nominal voltage.	The amount of heat dissipation that can occur when there is no field power present.	The watts per point plus the minimum watts (with all points energized).

For examples on calculating system heat dissipation, refer to the *SLC 500 Modular Hardware Style Installation and Operation User Manual* (Publication 1747-6.2) or the *SLC 500 Fixed Hardware Style Installation and Operation User Manual* (Publication 1747-6.21).

Power Dissipation

Catalog Number	Watts per Point	Minimum Watts	Total Watts	Catalog Numbers	Watts per Point	Minimum Watts	Total Watts
1746-IA4	0.27	0.175	1.30	1746-OB6EI	0.440	0.230	2.90
1746-IA8	0.27	0.250	2.40	1746-OB8	0.775	0.675	6.90
1746-IA16	0.27	0.425	4.80	1746-OB16	0.338	1.40	7.60
1746-IB8	0.20	0.250	1.90	1746-OB16E	0.150	0.675	3.07
1746-IB16	0.20	0.425	3.60	1746-OB32	0.172	0.950	6.45
1746-IB32	0.20	0.250	6.65	1746-OB32E	0.250	0.95	8.95
1746-IC16	0.22	0.425	3.95	1746-OBP8	0.300	0.675	3.08
1746-IG16	0.02	0.700	1.00	1746-OBP16	0.310	1.250	6.26
1746-IH16	0.32	0.217	5.17	1746-OG16	0.033	0.900	1.50
1746-IM4	0.35	0.175	1.60	1746-OV8	0.775	0.675	6.90
1746-IM8	0.35	0.250	3.10	1746-OV16	0.388	1.400	7.60
1746-IM16	0.35	0.425	6.00	1746-OV32	0.172	0.950	6.45
1746-IN16	0.35	0.425	6.00	1746-OVP16	0.310	1.250	6.26
1746-ITB16	0.20	0.425	3.60	1746-OW4	0.133	1.310	1.90
1746-ITV16	0.20	0.425	3.60	1746-OW8	0.138	2.590	3.70
1746-IV8	0.20	0.250	1.90	1746-OW16	0.033	5.170	5.70
1746-IV16	0.20	0.425	3.60	1746-OX8	0.825	2.590	8.60
1746-IV32	0.20	0.250	6.65	1746-IO4	0.27 per input point 0.133 per output point	0.75	1.60
1746-OA8	1.000	0.925	9.00	1746-IO8	0.27 per input point 0.133 per output point	1.38	3.00
1746-OA16	0.462	1.850	9.30	1746-IO12	0.27 per input point 0.133 per output point	2.13	4.60
1746-OAP12	1.000	1.850	10.85	1746-IO12DC	0.20 per input point 0.133 per output point	1.84	3.90