

## Digital I/O Module Summary

Catalog Number	Inputs	Outputs	Terminal Base Unit	Electrical Range	Module Type	
<b>DC Modules</b>						
1794-IB8	8	—	1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK	24V DC	Nonisolated inputs	
1794-IB16	16	—	1794-TB32, 1794-TB32S		Group isolated inputs Diagnostics	
1794-IB16D					Nonisolated inputs Extended temperatures	
1794-IB16XT					Nonisolated I/O	
1794-IB10XOB6	10	6	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK		Nonisolated I/O Extended temperatures	
1794-IB10XOB6XT					Nonisolated I/O Protected outputs	
1794-IB16XOB16P	16	—	1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK		48V DC	Nonisolated inputs
1794-IC16					5V DC	
1794-IG16					125V DC	
1794-IH16					24V DC	
1794-IV16						
1794-IB32				32	1794-TB32, 1794-TB32S	
1794-IV32						
1794-OB8	—	8	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK	24V DC	Nonisolated outputs	
1794-OB8EP			1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN, 1794-TB3K, 1794-TB3SK, 1794-TBNK		Nonisolated, protected outputs	
1794-OB8EPXT			Nonisolated, protected outputs Extended temperatures			
1794-OB16	—	16	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK	24V DC	Nonisolated outputs	
1794-OB16D			Group isolated inputs Diagnostics			
1794-OB16P			1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN, 1794-TB3K, 1794-TB3SK, 1794-TBNK		Nonisolated, protected outputs Conformal coated	
1794-OB16PXT			Nonisolated, protected outputs Extended temperatures			
1794-OB32P		32	1794-TB32, 1794-TB32S		Nonisolated, protected outputs with groups	

## FLEX I/O Digital DC Output Modules

- 1794-OB8 and 1794-OB16 provide 16 sourcing 1/2 Amp outputs (8 for the 1794-OB8) over a wide 10...31.2V DC input voltage range.
- 1794-OV16 is the sinking version of the 1794-OB16.
- 1794-OV32 is the 32 output version of the 1794-OV16.
- 1794-OC16 is the 48V DC version of the 1794-OB16.
- These modules are not fused. External fusing is strongly recommended or use protected output modules. Module outputs are not fused. Fusing of outputs is recommended. If fusing is desired, you must provide external fusing.

For 1794-OB8, 1794-OB16, and 1794-OV16 use SAN-O MQ4-800 mA fuse.

For 1794-OC16 use 2 A, 150V AC MQ2 normal fuse.

### Digital DC Output Comparison

Specification	1794-OB8	1794-OB16	1794-OV16	1794-OV32	1794-OG16	1794-OC16
Voltage, on-state output, nom	24V DC, sourcing		24V DC, sinking		0V DC	48V DC, sourcing
Voltage, on-state output, min	10V DC				0V DC	30V DC
Voltage, on-state input, max	31.2V DC				0.4V DC	60V DC @ 45 °C 55V DC @ 55 °C
Voltage drop, on-state output, max	0.5V DC		0.2V DC		—	1.0V DC @ 0.5 A
Terminal base unit	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK		1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK			1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK
Current, on-state output, min	1.0 mA per channel				0.15 mA per channel	2.0 mA per channel
Current, off-state output, max	500 mA per channel 4 A per module	500 mA per channel 8 A per module		500 mA	24.0 mA per channel	500 mA per channel 8 A per module
Leakage current, off-state output, max	0.5 mA				1 mA	1.0 mA
Output surge current, max	2 A for 50 ms, repeatable every 2 s				—	4 A for 10 ms, repeatable every 2 s
Output delay time, OFF to ON, max	0.5 ms				0.25 ms	0.5 ms <sup>(1)</sup>
Output delay time, ON to OFF, max	1.0 ms				0.5 ms	1.0 ms @ 25 °C 2.0 ms @ 55 °C <sup>(2)</sup>
External DC supply voltage range	10...31.2V DC (5% ripple)				4.5...5.5V DC (includes 50 mV p-p ripple)	30...60V DC (5% ripple)
External DC supply current range	10...35 mA	20...65 mA		50 mA	100 mA @ 5V DC	13...27 mA
Power dissipation, max	3.3 W @ 31.2V DC	5.3 W @ 31.2V DC	4.2 W @ 31.2V DC	4.4 W @ 31.2V DC	0.8 W @ 5.5V DC	3.7 W @ 60V DC

**Digital DC Output Comparison**

Specification	1794-OB8	1794-OB16	1794-OV16	1794-OV32	1794-OG16	1794-OC16
Thermal dissipation, max	11.2 BTU/hr @31.2V DC	18.1 BTU/hr @31.2V DC	14.3 BTU/hr @ 31.2V DC	8.53 BTU/hr @ 31.2V DC	3.41 BTU/hr @ 5.5V DC	12.6 BTU/hr @ 60V DC
Dimensions (HxWxD), approx	46 x 94 x 53 mm (1.8 x 3.7 x 2.1 in.) 94 x 94 x 69 mm (3.7 x 3.7 x 2.7 in.) installed					
Isolation voltage	50V continuous, I/O to system Tested to 850V DC for 1 s, I/O to system No isolation between individual channels		50V continuous Tested 1770V DC for 60 s, I/O to system No isolation between individual channels	50V (continuous), Basic Insulation Type, between field side and system Type tested at 707V DC for 60 s, between field side and system No isolation between individual channels		75V continuous, I/O to system Tested to 1900V DC for 1 s, I/O to system (No isolation between individual channels)

(1) OFF to ON delay is the time from a valid output ON signal to output energization. ON to OFF delay is the time from a valid output OFF signal to output de-energization.

**FLEX I/O Digital DC Protected Output Modules**

- 1794-OB16P provides 16 sourcing 1/2 Amp outputs self-protected against shorts, overloads, and over temperature. The faulted output will automatically return when the fault is removed. No feedback to the processor is provided.
- 1794-OB16PXT is the extended temperature version of the 1794-OB16P module. The module is conformal coated.
- 1794-OB8EP provides 8 sourcing 2 Amp outputs with electronic fuse type of overload protection, which opens when overloaded. The fuse can be 'reset' several ways. Fault status is provided to the processor.
- 1794-OB8EPXT is the extended temperature version of the 1794-OB8EP module. The module is conformal coated.
- 1794-OB32P provides 32 self-protected sourcing 1/2 Amp outputs in 2 groups of 16 outputs. Separate voltage sources can be used with each group.
- 1794-OV16P is the sinking version of the 1794-OB16P.

**Digital DC Protected Output Comparison**

Specification	1794-OB16P, 1794-OB16PXT	1794-OB8EP, 1794-OB8EPXT	1794-OB32P	1794-OV16P
Voltage, on-state output, nom	24V DC, sourcing			24V DC, sinking
Voltage, on-state output, min	10V DC	19V.2 DC	10V DC	
Voltage, on-state output, max	31.2V DC <sup>(1)</sup>		31.2V DC	
Voltage drop, on-state output, max	0.5V DC	0.2V DC	0.5V DC	0.2V DC
Terminal base unit	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN, 1794-TB3K, 1794-TB3SK, 1794-TBNK	1794-TB32, 1794-TB32S	1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK
Current on-state output, min	1.0 mA per channel			

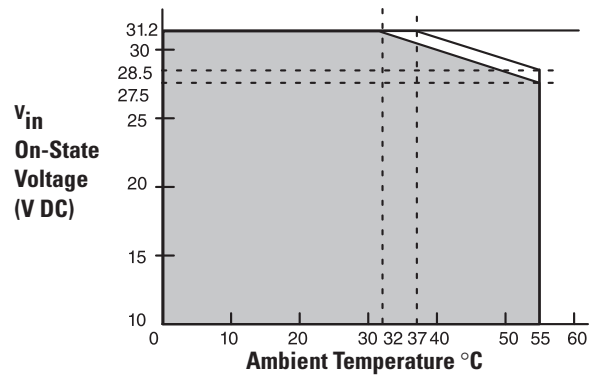
**Digital DC Protected Output Comparison**

Specification	1794-OB16P, 1794-OB16PXT	1794-OB8EP, 1794-OB8EPXT	1794-OB32P	1794-OV16P
Current, on-state output, max	500 mA per channel, 8 A per module	2.0 A per channel, 10 A per module	500 mA per channel, 14 A per module <sup>(2)</sup>	500 mA per channel, 8 A per module
Leakage current, off-state output, max	0.5 mA			
Output surge current, max	1.5 A for 50 ms, repeatable every 2 s	4 A for 50 ms, repeatable every 3 s	2 A for 50 ms, repeatable every 2 s	
Output delay time, OFF to ON, max	0.5 ms	0.1 ms	0.5 ms	
Output delay time, ON to OFF, max	1.0 ms	0.1 ms	1.0 ms	
External DC supply voltage range	10...31.2V DC (5% AC ripple)	19.2...31.2V DC (5% AC ripple)	10...31.2V DC (5% AC ripple)	
External DC supply current range	25...75 mA	20...35 mA	103...273 mA	20...65 mA
Power dissipation, max	5.0 W @ 31.2V DC	5.5 W @ 31.2V DC	5.3 W @ 31.2V DC	4.2 W @ 31.2V DC
Thermal dissipation, max	17.0 BTU/hr @ 31.2V DC	18.8 BTU/hr @ 31.2V DC	18.1 BTU/hr @ 31.2V DC	14.3 BTU/hr @ 31.2V DC
Dimensions (HxWxD), approx	46 x 94 x 53 mm (1.8 x 3.7 x 2.1 in.) 94 x 94 x 69 mm (3.7 x 3.7 x 2.7 in.) installed			
Isolation voltage	50V (continuous), Basic Insulation Type Type tested at 2121V DC for 60 s, between field side and system No isolation between individual channels	50V (continuous), Basic Insulation Type Type tested at 850V DC for 60 s, between field side and system <b>1794-OB8EPXT:</b> Type tested at 1500V AC for 60 s, between field side and system No isolation between individual channels		50V (continuous), Basic Insulation Type Type tested at 1770V DC for 60 s, between field side and system No isolation between individual channels

(1) See [1794-OB16P Derating Curve](#).

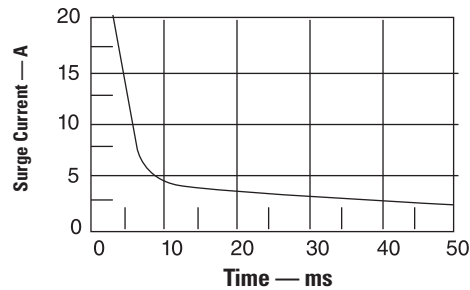
(2) 6.0 A total for channels 0...15; 8.0 A total for channels 16...31.

**1794-OB16P Derating Curve**



The area within the curve represents the safe operating range for the module under various conditions of user supplied 24V DC supply voltages and ambient temperatures.

= Normal mounting safe operating range  
 = Other mounting positions (including inverted horizontal, vertical) safe operating range

**1794-OB8EP Output Minimum Surge****FLEX I/O Digital DC Diagnostic Modules**

1794-IB16D is the diagnostic version of the 1794-IB16.

1794-OB16D is the diagnostic version of the 1794-OB16.

The modules can detect open wire, short circuit, and reverse polarity of external power. When the module detects a fault, the module fault LED status indicator lights up, the corresponding red channel LED status indicator lights up, and the corresponding module error bit (open wire, short circuit, or reverse power bit) is set. The reporting function provides results of the diagnostics as bits in its data table.

The modules have 16-bi-color channel LED status indicators and one red module status indicator. These indicators are driven from the customer field side power.

**Digital DC Diagnostic Input Module**

Specification	1794-IB16D
Voltage, on-state input, min	10V DC, sinking
Voltage, on-state input, nom	24V DC
Voltage, on-state input, max	31.2 DC <sup>(1)</sup>
Voltage, off-state input, max	5.0V DC
Current, on-state input, nom	8.2 mA @ 24V DC
Current, on-state input, max	12.1 mA @ 31.2V DC
Terminal base unit	1794-TB32, 1794-TB32S
Input impedance, max.	3.1 k $\Omega$
Current, on-state input, min	2.0 mA @ 10V DC
Current, off-state input, max	1.5 mA
Power dissipation, max	8.5 W @ 31.2V DC
Thermal dissipation, max	29 BTU/hr @ 31.2V DC
Detected reverse polarity voltage	10V min <sup>(2)</sup>
Sensor voltage drop, max	2.2V DC