



FLEX I/O Digital dc Output Modules

1794-OB8, -OB8EP, -OB8EPK, -OB16, -OB16P, -OB16PK, -OB32P

(Modules with a K in the last position of the catalog number are conformally coated to meet noxious gas requirements of ISA/ANSI-71.040-1985 Class G3 Environment.)

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://www.ab.com/manuals/gi>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual we use notes to make you aware of safety considerations.

WARNING Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.



IMPORTANT Identifies information that is critical for successful application and understanding of the product.

ATTENTION Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:



- identify a hazard
- avoid a hazard
- recognize the consequence

WARNING When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.



ATTENTION FLEX I/O is grounded through the DIN rail to chassis ground. Use zinc plated yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail materials (e.g. aluminum, plastic, etc.) that can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding.



ATTENTION



Environment and Enclosure

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as "open type" equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 ("Industrial Automation Wiring and Grounding Guidelines"), for additional installation requirements pertaining to this equipment.

ATTENTION



Preventing Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.

European Hazardous Location Approval

The following output modules are European Zone 2 approved: 1794-OB8, -OB8EP, -OB8EPK, -OB16, -OB16P and -OB16PK.

European Zone 2 Certification

This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC.

The LCIE (Laboratoire Central des Industries Electriques) certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in potentially explosive atmospheres, given in Annex II to this Directive. The examination and test results are recorded in confidential report No. 28 682 010.

Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50021.

IMPORTANT

Observe the following additional Zone 2 certification requirements.

- This equipment is not resistant to sunlight or other sources of UV radiation.
- The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.
- Equipment of lesser Enclosure Type Rating must be installed in an enclosure providing at least IP54 protection when applied in Class I, Zone 2 environments.
- This equipment shall be used within its specified ratings defined by Allen-Bradley.
- Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40% when applied in Class I, Zone 2 environments

North American Hazardous Location Approval

The following output modules are North American Hazardous Location approved: 1794-OB8, -OB8EP, -OB8EPK, -OB16, -OB16P and -OB16PK.

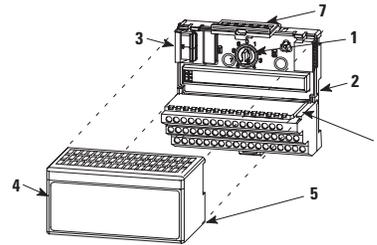
The following information applies when operating this equipment in hazardous locations:		Informations sur l'utilisation de cet équipement en environnements dangereux :	
<p>Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.</p>		<p>Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.</p>	
<p>WARNING</p> 	<p>EXPLOSION HAZARD</p> <ul style="list-style-type: none"> • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous. 	<p>AVERTISSEMENT</p> 	<p>RISQUE D'EXPLOSION</p> <ul style="list-style-type: none"> • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Compatibility

The following communication adapters are required to ensure compatibility with the 1794-OB32P:

Remote I/O	1794-ASB series E or later 1794-ASB2 series D or later
ControlNet™	1794-ACN15 series C, firmware revision 4.1 or later 1794-ACNR15 series C, firmware revision 4.1 or later
Ethernet™	1794-AENT series A, firmware revision 2.4 or later
PROFIBUS™	1794-APB series A, version 1.1 of the GSD file (you can download the GSD file at www.ab.com/networks/gsd)
ControlLogix™ Family	RSLogix5000 programming software, version 11 or later

Installing Your Digital Output Module



ATTENTION

During mounting of all devices, be sure that all debris (metal chips, wire strands, etc.) is kept from falling into the module. Debris that falls into the module could cause damage on power up.



The module mounts on a 1794 terminal base.

1. Rotate the keyswitch (1) on the terminal base (2) clockwise to position 2 as required for this type of module.
2. Make certain the flexbus connector (3) is pushed all the way to the left to connect with the neighboring terminal base/adaptor. **You cannot install the module unless the connector is fully extended.**
3. Make sure the pins on the bottom of the module are straight so they will align properly with the connector in the terminal base.

WARNING



If you remove or insert the module while the backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

4. Position the module (4) with its alignment bar (5) aligned with the groove (6) on the terminal base.
5. Press firmly and evenly to seat the module in the terminal base unit. The module is seated when the latching mechanism (7) is locked into the module.

Connecting Wiring for the 1794-OB8, -OB8EP, -OB8EPK, -OB16, -OB16P and -OB16PK

1. Connect individual output wiring to numbered terminals on the 0-15 row (A) as indicated in the table below (1794-OB8 - Terminals 0-7; 1794-OB16 and -OB16P(K) - terminals 0-15; 1794-OB8EP(K) - even numbered terminals 0-14).
2. Connect the associated -V output common to the corresponding terminal on the 16-33 row (B) for each output as indicated in the table below. (Commons are internally connected together.)
1794-OB8EP(K) - connect associated output common to odd-numbered terminals on row A or associated terminals on row B.
3. Connect +V dc power to terminal 34 on the 34-51 row (C).
4. Connect -V dc common to terminal 16 on the 16-33 row (B).
5. If daisy chaining power to the next terminal base, connect a jumper from terminal 51 (+V dc) on this base unit to terminal 34 on the next base unit.
6. If continuing -V dc common to the next base unit, connect a jumper from terminal 33 (common) on this base unit to terminal 16 on the next base unit.

Wiring Connections for the 1794-OB8, -OB16, -OB16P and -OB16PK using the 1794-TB2, -TB3, or -TB3S

Output ¹	Output Terminal	Common Terminal
Output 0	A-0	B-17
Output 1	A-2	B-18
Output 2	A-4	B-19
Output 3	A-6	B-20
Output 4	A-8	B-21
Output 5	A-10	B-22
Output 6	A-12	B-23
Output 7	A-14	B-24
Output 8	A-8	B-25
Output 9	A-9	B-26
Output 10	A-10	B-27
Output 11	A-11	B-28
Output 12	A-12	B-29
Output 13	A-13	B-30
Output 14	A-14	B-31
Output 15	A-15	B-32
+V dc	C-34 thru C-51 (C-34 and C-51 for 1794-TB2)	
Common	B-16 thru B-33	

¹1794-OB8 - Outputs 0 thru 7; 1794-OB16, -OB16PK and -OB16P - Outputs 0 thru 15

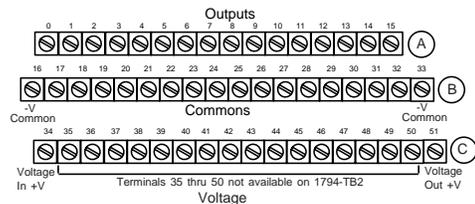
Wiring Connections for the 1794-OB8EP and -OB8EPK

Output	1794-TB2, -TB3, TB3S		1794-TBN	
	Output Terminal	Common Terminal ¹	Output Terminal	Common Terminal ²
Output 0	A-0	A-1/B-17	B-0	C-1
Output 1	A-2	A-3/B-18	B-2	C-3
Output 2	A-4	A-5/B-19	B-4	C-5
Output 3	A-6	A-7/B-20	B-6	C-7
Output 4	A-8	A-9/B-21	B-8	C-9
Output 5	A-10	A-11/B-22	B-10	C-11
Output 6	A-12	A-13/B-23	B-12	C-13
Output 7	A-14	A-15/B-24	B-14	C-15
+V dc	C-34 thru C-51 (C-34 and C-51 for 1794-TB2, -TBN)			
Common	B-16 thru B-33 (B-16 and B-33 for 1794-TBN)			

¹ 1794-TB2, -TB3, -TB3S - A-1, A-3, A-5, A-7, A-9, A-11, A-13 and A-15 are connected together inside the module to 24V dc common.

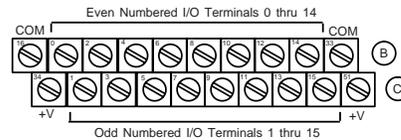
² 1794-TBN - C-1, C-3, C-5, C-7, C-9, C-11, C-13 and C-15 are connected together inside the module to 24V dc common.

1794-TB2, -TB3 and -TB3S Terminal Base Wiring for 1794-OB8, -OB8EP, -OB8EPK, -OB16, -OB16P and -OB16PK



Connect -V (Supply Common) to terminal B-16 (1794-TB3 shown)
 Connect +V (Supply +Voltage) to terminal C-34
 (Use B-33 and C-51 for daisy-chaining to next terminal base unit.)
 Total current draw through the terminal base is limited to 10A. Separate power connections to each terminal base may be necessary.

1794-TBN Terminal Base Wiring for the 1794-OB8EP



Connect -V (Supply Common) to terminal B-16
 Connect +V (Supply +Voltage) to terminal C-34
 (Use B-33 and C-51 for daisy-chaining to next terminal base unit.)
 Total current draw through the terminal base is limited to 10A. Separate power connections to each terminal base may be necessary.

Connecting Wiring for the 1794-OB32P

1. Connect individual output wiring (OUT0 to OUT15) to numbered terminals on the 0-15 row (A) as indicated in the table below.
2. Connect the associated power to the +V1 terminal (35, 37, 39 or 41) on the 34-51 row (C) as indicated in the table below.
3. Connect the associated output common (-V1) for OUT0 to OUT15 to COM1 (terminal 36, 38, 40 or 42) on the 34 to 51 row (C).

4. Connect individual output wiring (OUT16 to OUT31) to numbered terminals on the 16-33 row (B) as indicated in the table below.
5. Connect the associated power to the +V2 terminal (43, 45, 47 or 49) on the 34-51 row (C) as indicated in the table below.
6. Connect the associated output common (-V2) for OUT16 to OUT31 to COM2 (terminals 44, 46, 48 or 50) on the 34 to 51 row (C).
7. If continuing power to the next terminal base, connect a jumper from terminal 35, 37, 39 or 41 (+V1) and 43, 45, 37 or 49 (+V2) on this base unit to the power terminal on the next base unit.
8. If continuing output common return to the next base unit, connect a jumper from terminal 36, 38, 40 or 42 (COM1) and 44, 46, 48 or 50 (COM2) on this base unit to common on the next base unit (refer to the installation instructions for the next type of terminal base unit).

Note: Total current draw through the terminal base is limited to 10A. Separate power connections may be necessary.

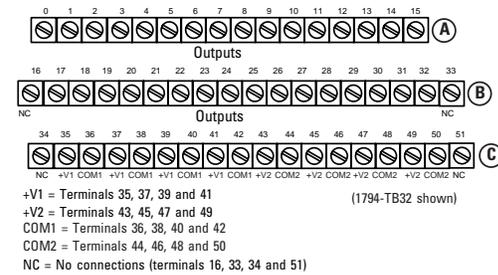
Wiring Connections for the 1794-OB32P (used with 1794-TB32 or -TB32S Terminal Base Unit)

Output	Output Terminal	Common	Power
Output 0	A-0	Connect common to terminals 36, 38, 40 and 42	Connect power to terminals 35, 37, 39 and 41
Output 1	A-1		
Output 2	A-2		
Output 3	A-3		
Output 4	A-4		
Output 5	A-5		
Output 6	A-6		
Output 7	A-7		
Output 8	A-8		
Output 9	A-9		
Output 10	A-10		
Output 11	A-11		
Output 12	A-12		
Output 13	A-13		
Output 14	A-14		
Output 15	A-15		

Output	Output Terminal	Common	Power
Output 16	B-17	Connect common to terminals 44, 46, 48 and 50	Connect power to terminals 43, 45, 47 and 49
Output 17	B-18		
Output 18	B-19		
Output 19	B-20		
Output 20	B-21		
Output 21	B-22		
Output 22	B-23		
Output 23	B-24		
Output 24	B-25		
Output 25	B-26		
Output 26	B-27		
Output 27	B-28		
Output 28	B-29		
Output 29	B-30		
Output 30	B-31		
Output 31	B-32		

For Outputs 0 thru 15, use +V1 and COM1	
+V1 dc power	Power terminals 35, 37, 39 and 41
Com1 dc Return	Common terminals 36, 38, 40 and 42
For Outputs 16 thru 31, use +V2 and COM2	
+V2 dc power	Power terminals 43, 45, 47 and 49
Com2 dc Return	Common terminals 44, 46, 48 and 50

1794-TB32 and -TB32S Terminal Base Wiring for 1794-OB32P



Configuring Your 1794-OB8EP and -OB8EPK Output Module

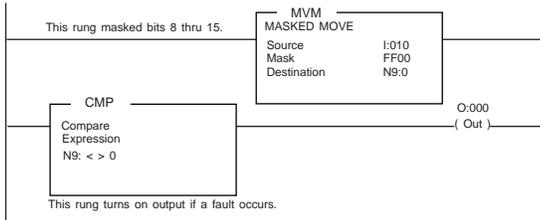
You configure your output module by setting bits in the configuration word (see below).

Dec.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
Oct.	17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0	
Read	F7	F6	F5	F4	F3	F2	F1	F0	Reserved (see note)								
Write	Not used								FR	0	0	0	0	0	0	0	
Write	Not used								FR	7	6	5	4	3	2	1	0

Where: 0 = Output - 00 corresponds to output 0, 01 corresponds to output 1, etc.
 F = Overload fault; bits - 1 = fault present; 0 = no fault
 FR = Fault reset bit - 1 = reset output; 0 = no change
Note: The unused lower byte in read word 1 floats during operation. Do not use this byte for fault status. See Programming below.

Programming the 1794-OB8EP and -OB8EPK

If your program automatically checks for fault bits, bits 8 thru 15 of read word 1 must be masked. This is a sample program for a module at rack address 1, group 0. Add similar rungs to your program.



Resetting a Fault on the 1794-OB8EP or -OB8EPK

Faults can be reset 3 ways: press the fault reset button on the front of the module; or toggle the output reset bit (write word 1, bit 08); or cycle backplane power.

Using the Reset Button on the 1794-OB8EP or -OB8EPK

When you press the reset button, the fault indicator for the faulted output turns off for about 1.2s. After the delay, the faulted output attempts to turn on. If the external condition causing the fault is corrected, the output will remain on, the fault indicator is off, and the status indicator is on.

Configuring Your 1794-OB8, -OB16, -OB16P and -OB32P Output Module

You configure your output module by setting bits in the configuration word (word 3).

Dec.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Oct.	17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0
Read	Not used															
Write	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Write 1794-OB32P only	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16

Where 0 = Output - 00 corresponds to output 0, 01 corresponds to output 1, etc.
1794-OB8 uses outputs 0-7, 1794-OB16 and -OB16P use outputs 0-15, 1794-OB32P uses outputs 0-31.

Specifications

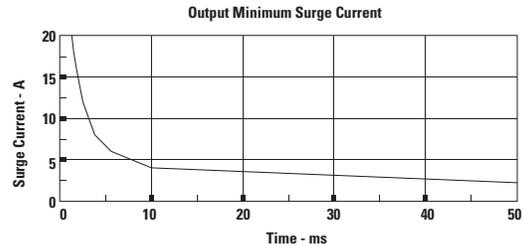
Specifications - 24V dc 8 Output Module, Cat. No. 1794-OB8

Number of Outputs	8, nonisolated, sourcing
Module Location	Cat. No. 1794-TB2, -TB3, -TB3S
On-state Current	1.0mA minimum per channel 500mA maximum per channel
Output Current Rating	4.0A (8 outputs @ 0.5A)
Surge Current	2A for 50ms, repeatable every 2s
Off-state Leakage	0.5mA maximum
On-state Voltage Drop	0.5V dc maximum
Isolation Voltage	Tested at 850V dc for 1s between user and system No isolation between individual channels
Output Signal Delay	Off to On - 0.5ms maximum On to Off - 1.0ms maximum
Flexbus Current	60mA
Power Dissipation	3.3W maximum @ 31.2V dc
Thermal Dissipation	Maximum 11.2 BTU/hr @ 31.2V dc
Indicators (field side indication, logic driven)	8 yellow status indicators
Fusing	Module outputs are not fused. Fusing is recommended. If fusing is desired, you must provide external fusing. Use SAN-O MQ4-800mA fuses

Specifications - 24V dc 8 Output Module, Cat. No. 1794-OB8EP and -OB8EPK

Number of Outputs	8 (1 group of 8), nonisolated, sourcing
Module Location	Cat. No. 1794-TB2, -TB3, -TB3S, -TBN
On-state Current	1.0mA minimum per channel 2A maximum per channel
Output Current Rating	Maximum 2A per output, 10A maximum per module (e.g. 8 outputs @ 1.25A, 5 outputs @ 2A, or similar combinations totaling 10A or less)
Surge Current	4A for 10ms, repeatable every 3s (see chart)
Off-state Leakage	0.5mA maximum
On-state Voltage Drop	0.2V dc maximum
Isolation Voltage	Tested at 850V dc for 1s between user and system No isolation between individual channels
Output Signal Delay	Off to On - 0.5ms maximum On to Off - 1.0ms maximum
Flexbus Current	73mA
Power Dissipation	5.5W maximum @ 31.2V dc
Thermal Dissipation	Maximum 18.8 BTU/hr @ 31.2V dc
Indicators (field side indication, logic driven)	8 yellow status indicators 8 red fault indicators
Fusing	Outputs are electronically fused

Surge Current for the 1794-OB8EP and -OB8EPK



Specifications - 16 Output Modules 1794-OB16, -OB16P and -OB16PK

	1794-OB16	1794-OB16P, -OB16PK
Number of Outputs	16, nonisolated, sourcing	
Module Location	Cat. No. 1794-TB2, -TB3, -TB3S	
On-state Current	1.0mA minimum per channel 500mA maximum per channel	
Output Current Rating	8.0A (16 outputs @ 0.5A)	
Surge Current	2A for 50ms, repeatable every 2s	
Off-state Leakage	0.5mA maximum	
On-state Voltage Drop	0.5V dc maximum	
Isolation Voltage	Tested at 850V dc for 1s between user and system No isolation between individual channels	Tested at 2121V dc for 1s between user and system No isolation between individual channels
Output Signal Delay	Off to On - 0.5ms maximum On to Off - 1.0ms maximum	
Flexbus Current	80mA	60mA
Power Dissipation	5.3W maximum @ 31.2V dc	5.0W maximum @ 31.2V dc
Thermal Dissipation	Maximum 18.1 BTU/hr @ 31.2V dc	Maximum 17.0 BTU/hr @ 31.2V dc
Indicators (field side indication, logic driven)	16 yellow status indicators	
Fusing	Module outputs are not fused. Fusing is recommended. If fusing is desired, you must provide external fusing. Use SAN-O MQ4-800mA fuses	Outputs are electronically protected.

Specifications - 24V dc 32 Output Module, Cat. No. 1794-OB32P

Number of Outputs	32 (2 groups of 16) nonisolated within groups, sourcing
Module Location	Cat. No. 1794-TB32, -TB32S
On-state Current	1.0mA minimum per channel; 500mA maximum per channel
Output Current Rating	14A maximum per module (6A total for channels 0-15; 8A total for channels 16-31)
Surge Current	2A for 50ms, repeatable every 2s
Off-state Leakage	0.5mA maximum
On-state Voltage Drop	0.5V dc maximum
Isolation Voltage	Tested at 2121V dc for 1s between user and system No isolation between individual channels
Output Signal Delay	Off to On - 0.5ms maximum On to Off - 1.0ms maximum
Flexbus Current	80mA
Power Dissipation	5.3W maximum @ 31.2V dc
Thermal Dissipation	Maximum 18.1 BTU/hr @ 31.2V dc
Indicators (field side indication, logic driven)	32 yellow status indicators
Fusing	Outputs are electronically protected.

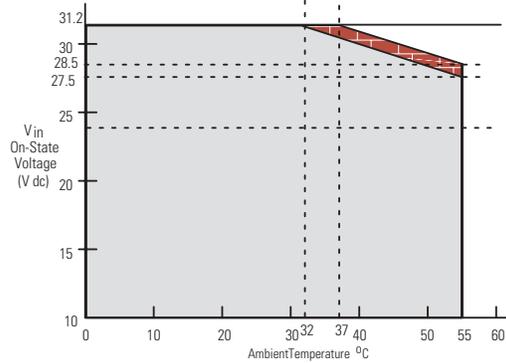
General Specifications

On-state Voltage Range	10V dc minimum (1794-OB8EP - 19.2V dc minimum) 24V dc nominal 31.2V dc maximum
Off-state Voltage	31.2V dc maximum
Terminal Base Screw Torque	7 pound-inches (0.8Nm) 1794-TBN - 9 pound-inches (1.0Nm)
External dc Power Supply Voltage Range	24V dc nominal 1794-OB8, -OB16, -OB16P, -OB32P - 10 to 31.2V dc (includes 5% ac ripple) 1794-OB8EP - 19.2 to 31.2V dc (includes 5% ac ripple)
Supply Current	1794-OB8 - 25mA @ 24V dc (10 to 35mA) 1794-OB8EP - 80mA @ 24V dc 1794-OB16 - 49mA @ 24V dc (20-65mA) 1794-OB16P - 60mA @ 24V dc (25 to 75mA) See derating curve. 1794-OB32P - 219mA @ 24V dc (104mA @ 10V dc; 278mA @ 31.2V dc)
Dimensions (with module installed)	3.7H x 3.7W x 2.7D inches 94H x 94W x 69D mm
Keypress Position	2
Environmental Conditions	
Operating Temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): 0 to 55°C (32 to 131°F)

Storage Temperature	IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock): -40 to 85°C (-40 to 185°F)
Relative Humidity	IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): 5 to 95% noncondensing
Vibration	IEC60068-2-6 (Test Fc, Operating): 5g @ 10-500Hz
Shock	IEC60068-2-27 (Test Ea, Unpackaged shock): Operating 30g Non-operating 50g
Emissions	CISPR 11: Group 1, Class A (with appropriate enclosure)
ESD Immunity	IEC 61000-4-2: 4kV contact discharges 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 1000MHz
EFT/B Immunity	IEC 61000-4-4: ±2kV at 5kHz on signal ports
Surge Transient Immunity	IEC 61000-4-5: ±1kV line-line(DM) and ±2kV line-earth(CM) on signal ports
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 30MHz
Enclosure Type Rating	None (open-style)
Conductors Wire Size	12AWG (4mm ²) stranded copper wire rated at 75°C or higher 3/64 inch (1.2mm) insulation maximum
Category ¹	2
Certifications (when product is marked) ²	UL UL Listed Industrial Control Equipment (all) cULus UL Listed Industrial Control Equipment, certified for US and Canada (1794-OB32P) cULus UL Listed for Class I, Division 2, Groups A, B, C and D Hazardous locations, certified for US and Canada (1794-OB8) CSA CSA certified for Class I, Division 2, Groups A, B, C and D Hazardous locations (1794-OB8, -OB8EP, -OB16, -OB16P) EEx² European Union 94/9/EEC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection "n" (Zone 2) - (1794-OB8, -OB8EP, -OB16, -OB16P) CE² European Union 89/336/EEC EMC Directive, compliant with: EN 61000-6-4; Industrial Emissions EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity (all) C-Tick² - Australian Radiocommunications Act compliant with AS/NZS CISPR 11, Industrial Emissions (all)

¹ You use this category information for planning conductor routing as described in Allen-Bradley publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines.
² For the latest up-to-date information, see the Product Certification link at www.ab.com for Declarations of Conformity, Certificates and other certification details. For notification of any additional release notes, refer to www.ab.com/manuals/.

Derating Curve for the 1794-OB16P



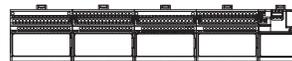
The area within the curve represents the safe operating range for the module under various conditions of user supplied 24V dc supply voltages and ambient temperatures.

■ = Normal mounting safe operating range, (includes ■).
■ = Other mounting positions (including inverted horizontal) safe operating range

Normal Mounting – Horizontal



Other Mounting (including Vertical, and Inverted Horizontal Mounting)



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