

# SPECIFICATIONS: DISCRETE I/O MODULES

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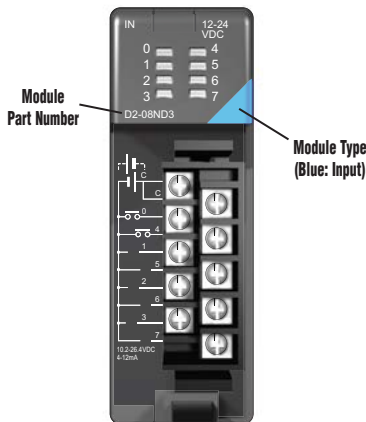
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## Discrete I/O Modules Overview

There are 25 discrete I/O modules available for use in local and remote I/O bases. The specifications and wiring diagrams for these modules are found in this chapter. Each discrete I/O module is identified as an “Input”, “Output” or “Input/Output” module using the color coding scheme shown below. A blue bar on the front panel signifies an Input I/O module, a red bar signifies an Output I/O module and a White bar signifies a combination Input/Output module.

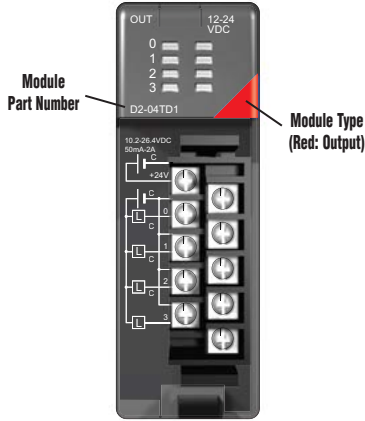
### Discrete Input Modules



Discrete Input Modules			
Part Number	Number of Inputs	Description	See Page
<b>D2-08ND3</b>	8	Sinking/Sourcing DC Input	5-4
<b>D2-16ND3-2</b>	16	Isolated Sinking/Sourcing DC Input	5-5
<b>D2-32ND3</b>	32	Isolated Sinking/Sourcing DC Input	5-6
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<b>D2-08NA-1</b>	8	AC Input	5-8
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<b>D2-16NA</b>	16	Isolated AC Input	5-10

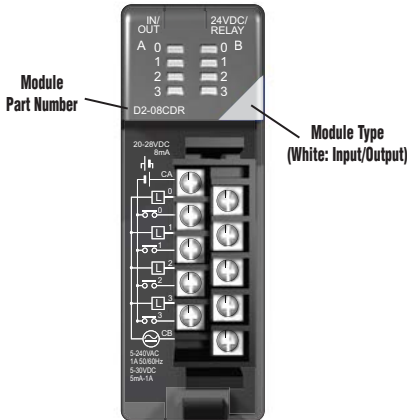
# Discrete I/O Modules Overview, continued

## Discrete Output Modules



Discrete Output Modules			
Part Number	Number of Outputs	Description	See Page
<b>D2-04TD1</b>	4	Sinking Output	5-11
<b>D2-08TD1</b>	8	Sinking Output	5-12
<b>D2-08TD2</b>	8	Sourcing Output	5-13
<b>D2-16TD1-2</b>	16	Sinking Output	5-14
<b>D2-16TD2-2</b>	16	Sourcing Output	5-15
<b>F2-16TD1P</b>	16	Protected Sinking Output	5-16
<b>F2-16TD2P</b>	16	Protected Sourcing Output	5-18
<b>D2-32TD1</b>	32	Sinking Output	5-20
<b>D2-32TD2</b>	32	Sourcing Output	5-21
<b>F2-08TA</b>	8	AC Output	5-22
<b>D2-08TA</b>	8	AC Output	5-23
<b>D2-12TA</b>	12	AC Output	5-24
<b>D2-04TRS</b>	4	Isolated Relay Output	5-25
<b>D2-08TR</b>	8	Relay Output	5-26
<b>F2-08TR</b>	8	Relay Output	5-27
<b>F2-08TRS</b>	8	Isolated Relay Output	5-28
<b>D2-12TR</b>	12	Relay Output	5-29

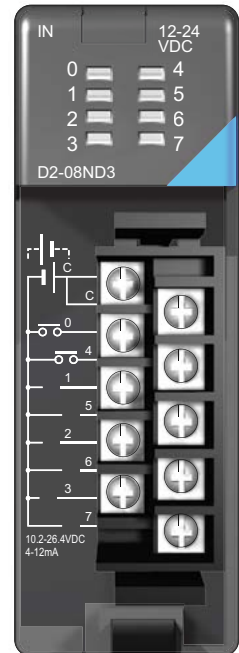
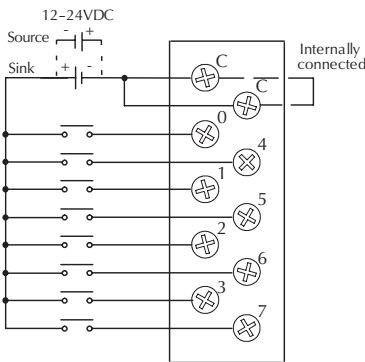
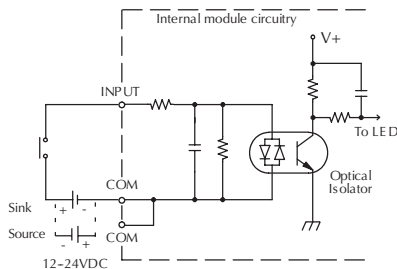
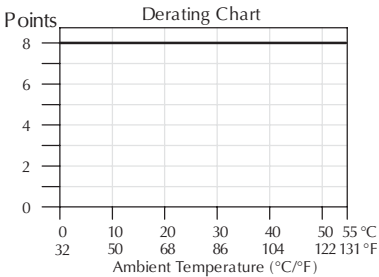
## Discrete Input/Output Module



Discrete Input/Output Modules				
Part Number	Number of Inputs	Number of Outputs	Description	See Page
<b>D2-08CDR</b>	4	4	Sinking/Sourcing DC Input with Relay Output	5-30

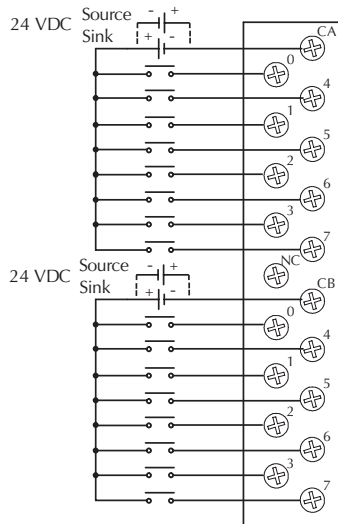
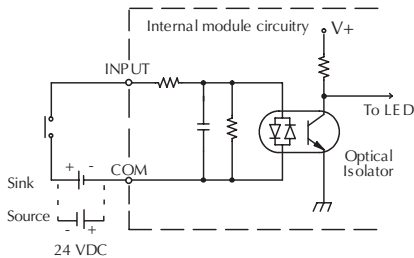
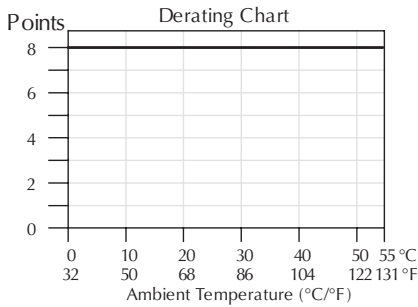
## D2-08ND3, DC Input

D2-08ND3 DC Input	
<b>Inputs per Module</b>	8 (sink/source)
<b>Commons per Module</b>	1 (2 I/O terminal points)
<b>Input Voltage Range</b>	10.2-26.4 VDC
<b>Peak Voltage</b>	26.4 VDC
<b>ON Voltage Level</b>	9.5 VDC minimum
<b>OFF Voltage Level</b>	3.5 VDC maximum
<b>AC Frequency</b>	N/A
<b>Input Impedance</b>	2.7 k $\Omega$
<b>Input Current</b>	4.0 mA @ 12VDC 8.5 mA @ 24VDC
<b>Minimum ON Current</b>	3.5 mA
<b>Maximum OFF Current</b>	1.5 mA
<b>Base Power Required 5VDC</b>	50mA
<b>OFF to ON Response</b>	1 to 8 ms
<b>ON to OFF Response</b>	1 to 8 ms
<b>Terminal Type (included)</b>	Removable, D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.3 oz. (65g)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5m)
	ZL-D2-CBL10-1 (1.0m)
	ZL-D2-CBL10-2 (2.0m)



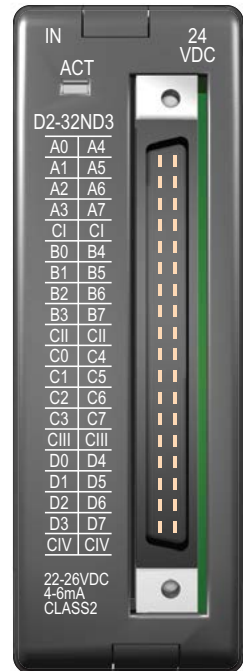
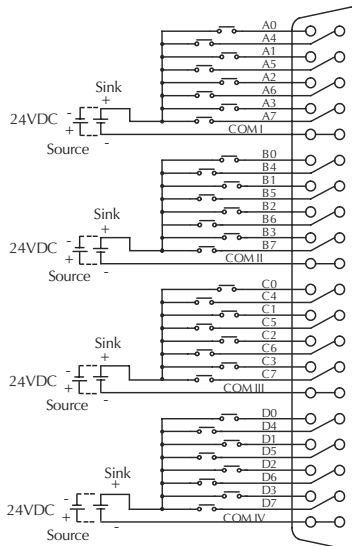
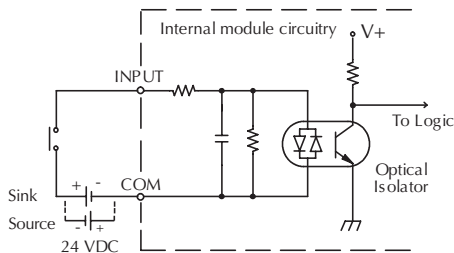
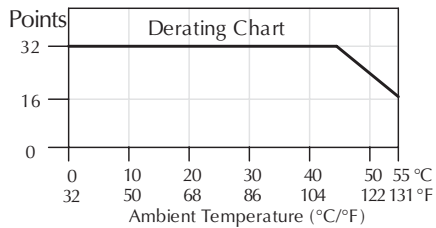
# D2-16ND3-2, DC Input

D2-16ND3-2 DC Input	
<b>Inputs per Module</b>	16 (sink/source)
<b>Commons per Module</b>	2 isolated (8 I/O terminal points/com)
<b>Input Voltage Range</b>	20–28 VDC
<b>Peak Voltage</b>	30VDC (10mA)
<b>ON Voltage Level</b>	19VDC minimum
<b>OFF Voltage Level</b>	7VDC maximum
<b>AC Frequency</b>	N/A
<b>Input Impedance</b>	3.9 kΩ
<b>Input Current</b>	6mA @ 24VDC
<b>Minimum ON Current</b>	3.5 mA
<b>Maximum OFF Current</b>	1.5 mA
<b>Base Power Required 5VDC</b>	100mA
<b>OFF to ON Response</b>	3 to 9 ms
<b>ON to OFF Response</b>	3 to 9 ms
<b>Terminal Type (included)</b>	Removable, D2-16IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.3 oz. (65g)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough) ZL-LTB16-24 (Sensor Input)
<b>ZIPLink Cable</b>	ZL-D2-CBL19 (0.5 m) ZL-D2-CBL19-1 (1.0 m) ZL-D2-CBL19-2 (2.0 m) ZL-D2-CBL19-1P (1.0 m Pigtail) ZL-D2-CBL19-2P (2.0 m Pigtail)



## D2-32ND3, DC Input

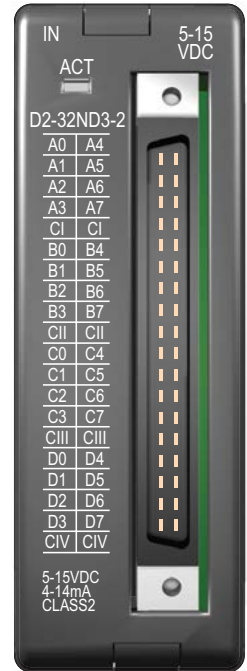
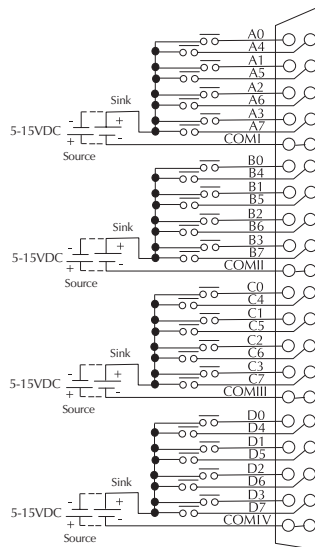
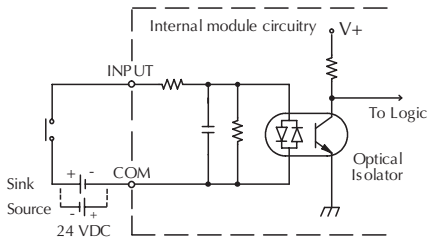
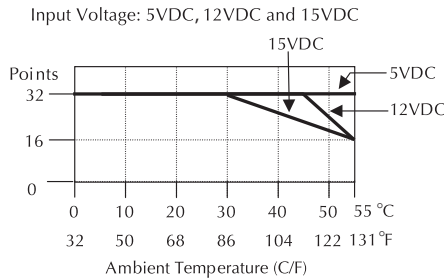
D2-32ND3 DC Input	
<b>Inputs per Module</b>	32 (sink/source)
<b>Commons per Module</b>	4 isolated (8 I/O terminal points / com)
<b>Input Voltage Range</b>	20–28 VDC
<b>Peak Voltage</b>	30VDC
<b>ON Voltage Level</b>	19VDC minimum
<b>OFF Voltage Level</b>	7VDC maximum
<b>AC Frequency</b>	N/A
<b>Input Impedance</b>	4.8 kΩ
<b>Input Current</b>	8.0 mA @ 24VDC
<b>Minimum ON Current</b>	3.5 mA
<b>Maximum OFF Current</b>	1.5 mA
<b>Base Power Required 5VDC</b>	25mA
<b>OFF to ON Response</b>	3 to 9 ms
<b>ON to OFF Response</b>	3 to 9 ms
<b>Terminal Type (not included)</b>	Removable 40-pin Connector <sup>1</sup>
<b>Status Indicator</b>	Module Activity LED
<b>Weight</b>	2.1 oz. (60g)
<b>ZIPLink Module</b>	ZL-RTB40 (Feedthrough) ZL-LTB32-24 (Sensor Input)
<b>ZIPLink Cable</b>	ZL-D24-CBL40 (0.5 m) ZL-D24-CBL40-1 (1.0 m) ZL-D24-CBL40-2 (2.0 m) ZL-D24-CBL40-1P (1.0 m Pigtail) ZL-D24-CBL40-2P (2.0 m Pigtail)
<i>ZIPLink connector is recommended or purchase custom connector separately.</i>	



# D2-32ND3-2, DC Input

D2-32ND3-2 DC Input	
<b>Inputs per Module</b>	32 (Sink/Source)
<b>Commons per Module</b>	4 isolated (8 I/O terminal points / com)
<b>Input Voltage Range</b>	4.50 to 15.6 VDC min. to max.
<b>Peak Voltage</b>	16VDC
<b>ON Voltage Level</b>	4VDC minimum
<b>OFF Voltage Level</b>	2VDC maximum
<b>AC Frequency</b>	N/A
<b>Input Impedance</b>	1.0 kΩ @ 5-15 VDC
<b>Input Current</b>	4mA @ 5VDC 11mA @ 12VDC 14mA @ 15VDC
<b>Maximum Input Current</b>	16mA @ 15.6 VDC
<b>Minimum ON Current</b>	3mA
<b>Maximum OFF Current</b>	0.5 mA
<b>Base Power Required 5VDC</b>	25mA
<b>OFF to ON Response</b>	3 to 9 ms
<b>ON to OFF Response</b>	3 to 9 ms
<b>Terminal Type (not included)</b>	Removable 40-pin connector <sup>1</sup>
<b>Status Indicator</b>	Module activity LED
<b>Weight</b>	2.1 oz (60g)
<b>ZIPLink Module</b>	ZL-RTB40 (Feedthrough) ZL-LTB32-24 (Sensor Input)
<b>ZIPLink Cable</b>	ZL-D24-CBL40 (0.5 m) ZL-D24-CBL40-1 (1.0 m) ZL-D24-CBL40-2 (2.0 m) ZL-D24-CBL40-1P (1.0 m Pigtail) ZL-D24-CBL40-2P (2.0 m Pigtail)
<b>ZIPLink connector is recommended or purchase custom connector separately.</b>	

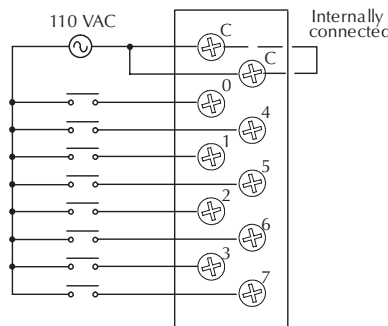
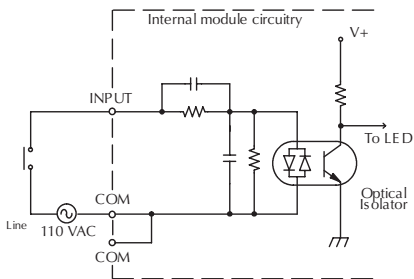
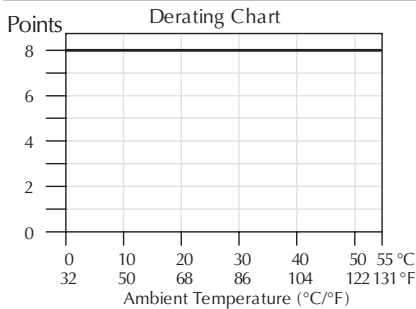
Derating Chart





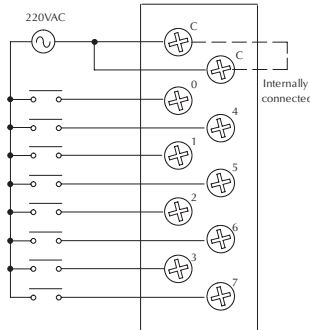
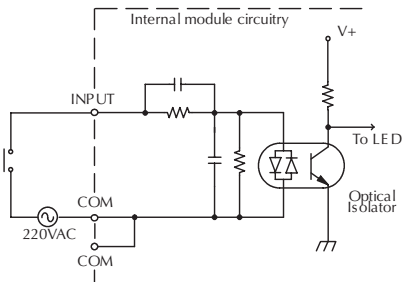
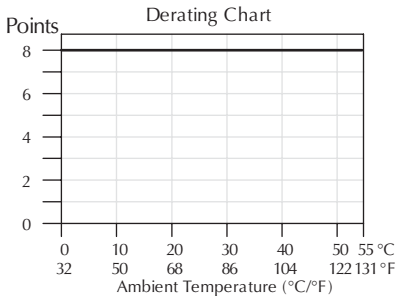
## D2-08NA-1, AC Input

D2-08NA-1 AC Input	
<b>Inputs per Module</b>	8
<b>Commons per Module</b>	1 (2 I/O terminal points)
<b>Input Voltage Range</b>	80–132 VAC
<b>Peak Voltage</b>	132VAC
<b>ON Voltage Level</b>	75VAC minimum
<b>OFF Voltage Level</b>	20VAC maximum
<b>AC Frequency</b>	47–63 Hz
<b>Input Impedance</b>	12kΩ @ 60Hz
<b>Input Current</b>	13mA @ 100VAC, 60Hz 11mA @ 100VAC, 50Hz
<b>Minimum ON Current</b>	5mA
<b>Maximum OFF Current</b>	2mA
<b>Base Power Required 5VDC</b>	50mA
<b>OFF to ON Response</b>	5 to 30 ms
<b>ON to OFF Response</b>	10 to 50 ms
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.5 oz. (70g)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)



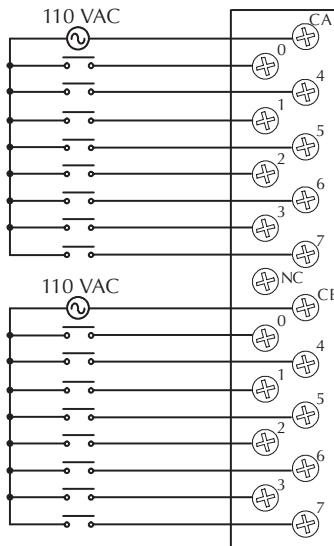
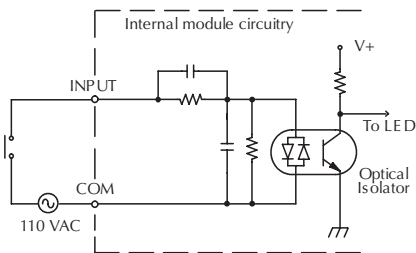
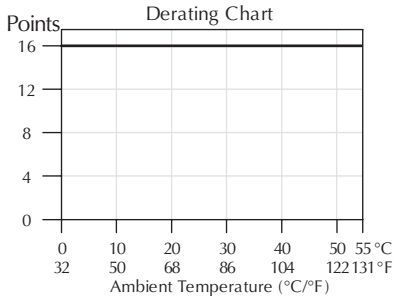
# D2-08NA-2, AC Input

D2-08NA-2 AC Input	
<b>Inputs per Module</b>	8
<b>Commons per Module</b>	1 (2 I/O terminal points)
<b>Input Voltage Range</b>	170–265 VAC
<b>Peak Voltage</b>	265VAC
<b>ON Voltage Level</b>	150VAC minimum
<b>OFF Voltage Level</b>	40VAC maximum
<b>AC Frequency</b>	47–63 Hz
<b>Input Impedance</b>	18kΩ @ 60 Hz
<b>Input Current</b>	9mA @ 220VAC, 50Hz 11mA @ 265VAC, 50Hz 10mA @ 220VAC, 60Hz 12mA @ 265VAC, 60Hz
<b>Minimum ON Current</b>	10mA
<b>Maximum OFF Current</b>	2mA
<b>Base Power Required 5VDC</b>	100mA
<b>OFF to ON Response</b>	5 to 30 ms
<b>ON to OFF Response</b>	10 to 50 ms
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.5 oz. (70g)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)



## D2-16NA, AC Input

D2-16NA AC Input	
<b>Inputs per Module</b>	16
<b>Commons per Module</b>	2 (isolated)
<b>Input Voltage Range</b>	80–132 VAC
<b>Peak Voltage</b>	132VAC
<b>ON Voltage Level</b>	70VAC minimum
<b>OFF Voltage Level</b>	20VAC maximum
<b>AC Frequency</b>	47–63 Hz
<b>Input Impedance</b>	12kΩ @ 60Hz
<b>Input Current</b>	11mA @ 100VAC, 50Hz 13mA @ 100VAC, 60Hz 15mA @ 132VAC, 60Hz
<b>Minimum ON Current</b>	5mA
<b>Maximum OFF Current</b>	2mA
<b>Base Power Required 5VDC</b>	100mA
<b>OFF to ON Response</b>	5 to 30 ms
<b>ON to OFF Response</b>	10 to 50 ms
<b>Terminal Type (included)</b>	Removable; D2-16IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.4 oz. (68g)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL19 (0.5 m) ZL-D2-CBL19-1 (1.0 m) ZL-D2-CBL19-2 (2.0 m) ZL-D2-CBL19-1P (1.0 m Pigtail) ZL-D2-CBL19-2P (2.0 m Pigtail)



# D2-04TD1, DC Output

D2-04TD1 DC Output	
<b>Outputs per Module</b>	4 (current sinking)
<b>Output Points Consumed</b>	8 points (only first 4 pts. used)
<b>Commons per Module</b>	1 (4 I/O terminal points)
<b>Output Type</b>	NMOS FET (open drain)
<b>Operating Voltage</b>	10.2–26.4 VDC
<b>Peak Voltage</b>	40VDC
<b>ON Voltage Drop</b>	0.72 VDC maximum
<b>AC Frequency</b>	N/A
<b>Max Load Current (resistive)</b>	4A/point 8A/common
<b>Max Leakage Current</b>	0.1 mA @ 40VDC
<b>Max Inrush Current</b>	6A for 100ms, 15A for 10ms
<b>Minimum Load Current</b>	50mA
<b>External DC Required</b>	24VDC @ 20mA max.
<b>Base Power Required 5VDC</b>	60mA
<b>OFF to ON Response</b>	1ms
<b>ON to OFF Response</b>	1ms
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.8 oz. (80g)
<b>Fuses</b>	4 (1 per point) (6.3 A slow blow, non-replaceable)
<b>ZIPLink Module*</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable*</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)
<b>*D2-04TD1 outputs are derated not to exceed 2 Amps per point and 2 Amps per common when using the ZIPLink wiring system.</b>	

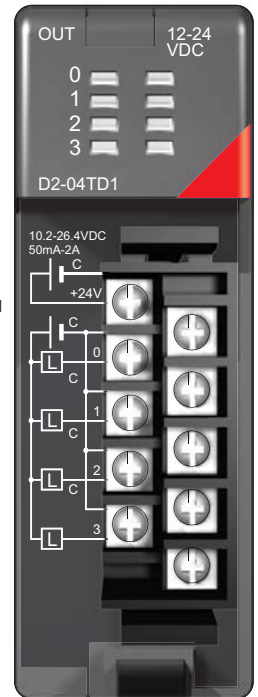
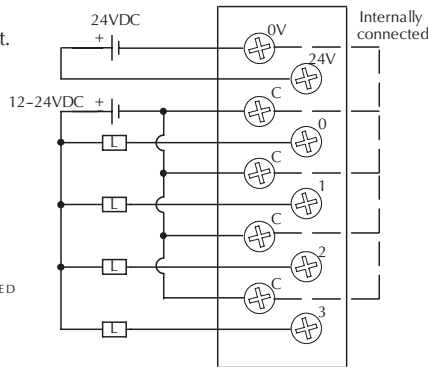
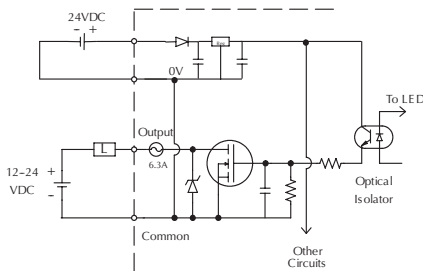
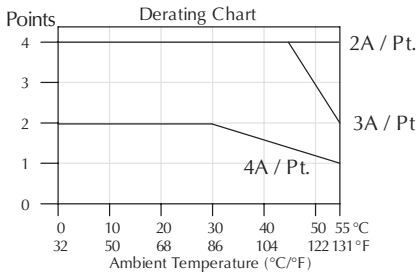
Inductive Load  
Maximum Number of Switching Cycles per Minute

Load Current	Duration of output in ON state		
	7ms	40ms	100ms
0.1 A	8000	1400	600
0.5 A	1600	300	120
1.0 A	800	140	60
1.5 A	540	90	35
2.0 A	400	70	-
3.0 A	270	-	-
4.0 A	200	-	-

At 40ms duration, loads of 3.0 A or greater cannot be used.

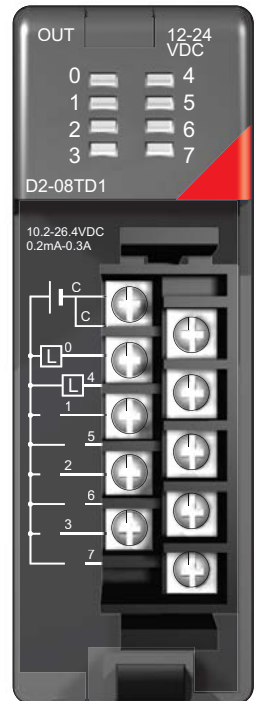
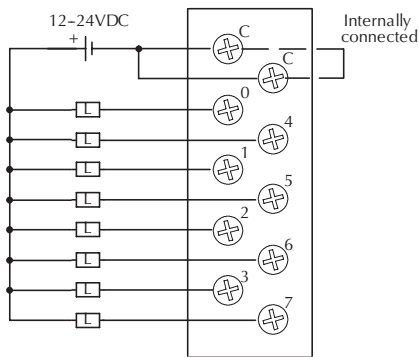
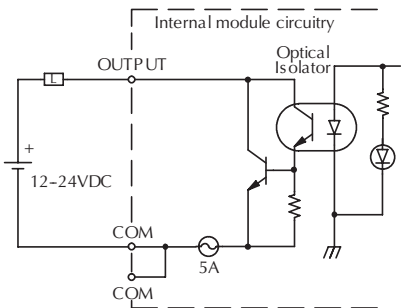
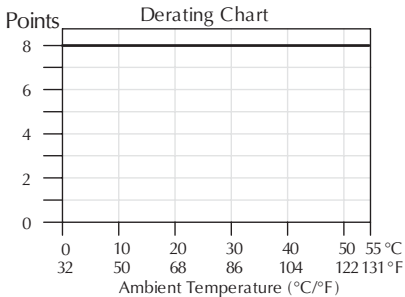
At 100ms duration, loads of 2.0 A or greater cannot be used.

Find the load current you expect to use and the duration that the output is ON. The number at the intersection of the row and column represents the switching cycles per minute. For example, a 1A inductive load that is on for 100 ms can be switched on and off a maximum of 60 times per minute. To convert this to duty cycle percentage use: (duration x cycles)/60. In this example, (60 x 0.1)/60 = 0.1, or 10% duty cycle.



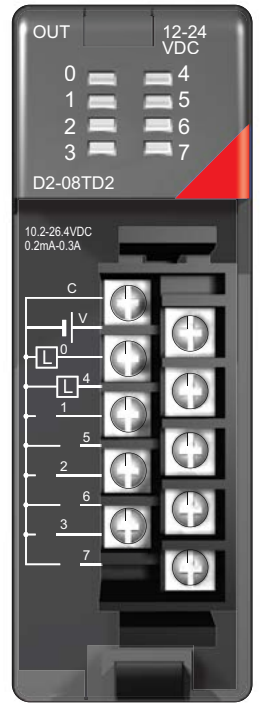
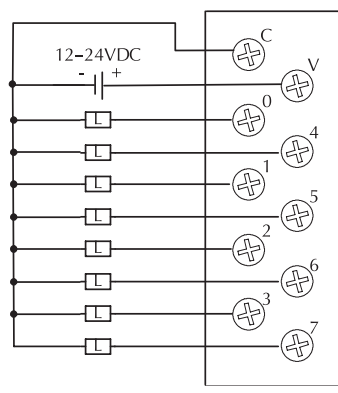
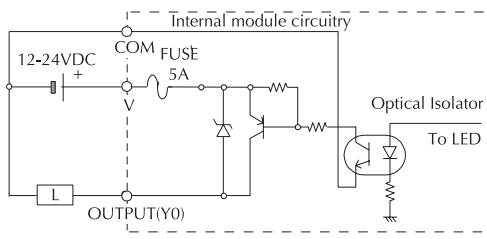
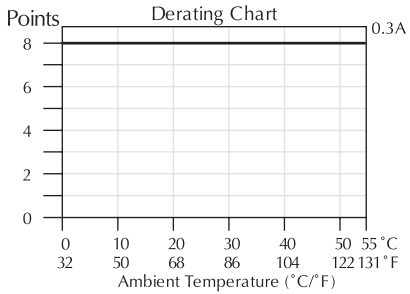
## D2-08TD1, DC Output

D2-08TD1 DC Output	
<b>Outputs per Module</b>	8 (current sinking)
<b>Commons per Module</b>	1 (2 I/O terminal points)
<b>Output Type</b>	NPN open collector
<b>Operating Voltage</b>	10.2–26.4 VDC
<b>Peak Voltage</b>	40VDC
<b>ON Voltage Drop</b>	1.5 VDC maximum
<b>AC Frequency</b>	N/A
<b>Minimum Load Current</b>	0.5 mA
<b>Max Load Current</b>	0.3 A/point; 2.4 A/common
<b>Max Leakage Current</b>	0.1 mA @ 40VDC
<b>Max Inrush Current</b>	1A for 10ms
<b>Base Power Required 5VDC</b>	100mA
<b>OFF to ON Response</b>	1ms
<b>ON to OFF Response</b>	1ms
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.3 oz. (65g)
<b>Fuses</b>	1 per common 5A fast blow, non-replaceable
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)



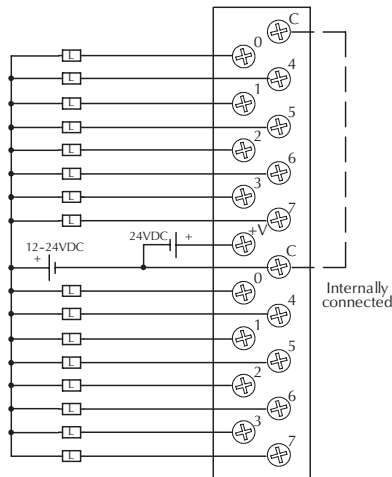
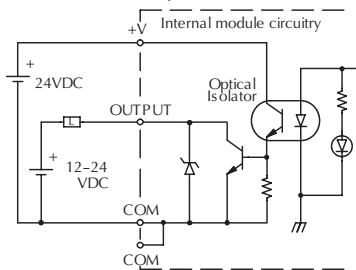
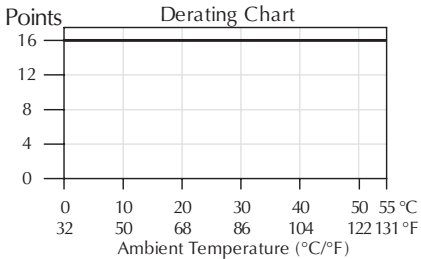
## D2-08TD2, DC Output

D2-08TD2 DC Output	
<b>Outputs per Module</b>	8 (current sourcing)
<b>Commons per Module</b>	1
<b>Output Type</b>	PNP open collector
<b>Operating Voltage</b>	12 to 24 VDC
<b>Output Voltage</b>	10.8 to 26.4 VDC
<b>Peak Voltage</b>	40VDC
<b>ON Voltage Drop</b>	1.5 VDC
<b>AC Frequency</b>	N/A
<b>Minimum Load Current</b>	N/A
<b>Max Load Current</b>	0.3 A per point; 2.4 A per common
<b>Max Leakage Current</b>	1.0 mA @ 40VDC
<b>Max Inrush Current</b>	1A for 10ms
<b>Base Power Required 5VDC</b>	100mA
<b>OFF to ON Response</b>	1ms
<b>ON to OFF Response</b>	1ms
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.1 oz. (60g)
<b>Fuses</b>	1 per common 5A fast blow, non-replaceable
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)



## D2-16TD1-2, DC Output

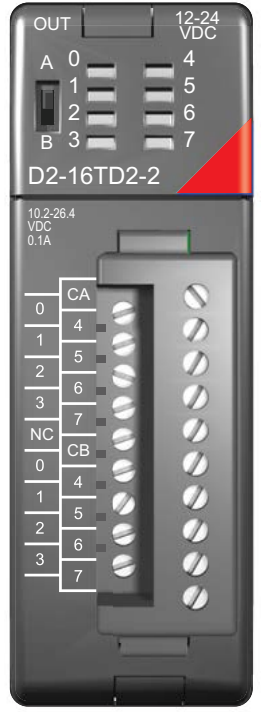
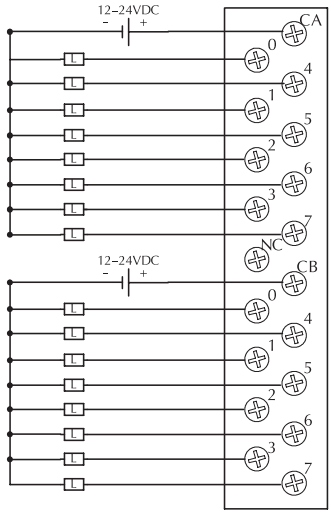
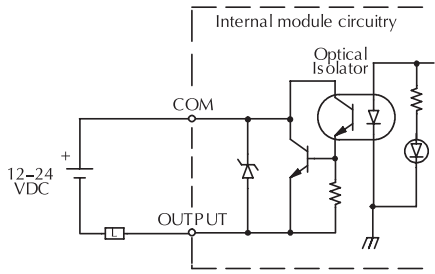
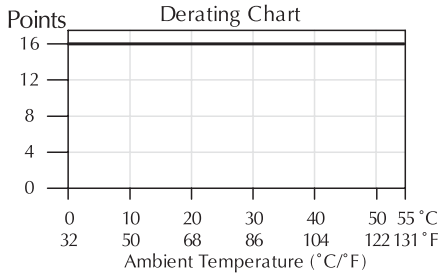
D2-16TD1-2 DC Output	
<b>Outputs per Module</b>	16 (current sinking)
<b>Commons per Module</b>	1 (2 I/O terminal points)
<b>Output Type</b>	NPN open collector
<b>External DC required</b>	24VDC ±4V @ 80mA max
<b>Operating Voltage</b>	10.2–26.4 VDC
<b>Peak Voltage</b>	30VDC
<b>ON Voltage Drop</b>	0.5 VDC maximum
<b>AC Frequency</b>	N/A
<b>Minimum Load Current</b>	0.2 mA
<b>Max Load Current</b>	0.1 A/point 1.6 A/common
<b>Max Leakage Current</b>	0.1 mA @ 30VDC
<b>Max Inrush Current</b>	150mA for 10ms
<b>Base Power Required 5VDC</b>	200mA
<b>OFF to ON Response</b>	0.5 ms
<b>ON to OFF Response</b>	0.5 ms
<b>Terminal Type (included)</b>	Removable; D2-16IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.3 oz. (65g)
<b>Fuses</b>	None
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough) ZL-RFU20 (Fuse) ZL-RRL16-24 (Relay)
<b>ZIPLink Cable</b>	ZL-D2-CBL19 (0.5 m) ZL-D2-CBL19-1 (1.0 m) ZL-D2-CBL19-2 (2.0 m) ZL-D2-CBL19-1P (1.0 m Pigtail) ZL-D2-CBL19-2P (2.0 m Pigtail)



\* Can also be used with 5VDC supply

## D2-16TD2-2, DC Output

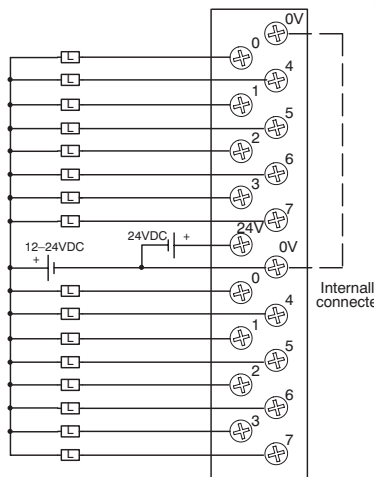
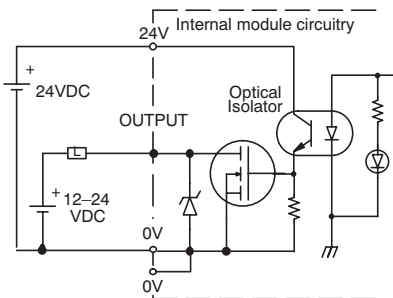
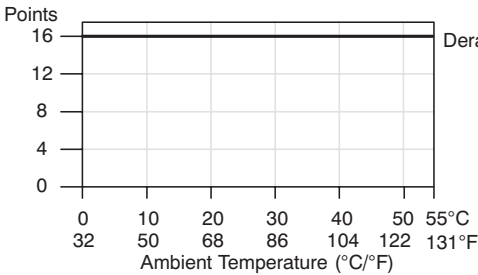
D2-16TD2-2 DC Output	
<b>Outputs per Module</b>	16 (current sourcing)
<b>Commons per Module</b>	2
<b>Output Type</b>	NPN open collector
<b>Operating Voltage</b>	10.2–26.4 VDC
<b>Peak Voltage</b>	30VDC
<b>ON Voltage Drop</b>	1.0 VDC maximum
<b>AC Frequency</b>	N/A
<b>Minimum Load Current</b>	0.2 mA
<b>Max Load Current</b>	0.1 A/point 1.6 A/module
<b>Max Leakage Current</b>	0.1 mA @ 30VDC
<b>Max Inrush Current</b>	150mA for 10ms
<b>Base Power Required 5VDC</b>	200mA
<b>OFF to ON Response</b>	0.5 ms
<b>ON to OFF Response</b>	0.5 ms
<b>Terminal Type (included)</b>	Removable; D2-16IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.8 oz. (80g)
<b>Fuses</b>	None
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough) ZL-RFU20 (Fuse)
<b>ZIPLink Cable</b>	ZL-D2-CBL19 (0.5 m) ZL-D2-CBL19-1 (1.0 m) ZL-D2-CBL19-2 (2.0 m) ZL-D2-CBL19-1P (1.0 m Pigtail) ZL-D2-CBL19-2P (2.0 m Pigtail)





# F2-16TD1P, DC Output With Fault Protection

F2-16TD1P DC Output with Fault Protection	
<b>Inputs per module</b>	16 (status indication)
<b>Outputs per module</b>	16 (current sinking)
<b>Commons per module</b>	1 (2 I/O terminal points)
<b>Output type</b>	NMOS FET (open drain)
<b>Operating voltage</b>	10.2–26.4 VDC, external
<b>Peak voltage</b>	40VDC
<b>AC frequency</b>	N/A
<b>ON voltage drop</b>	0.7 V (output current 0.5 A)
<b>Overcurrent trip</b>	0.6 A min., 1.2A max.
<b>Maximum load current</b>	0.25 A continuous, 0.5 A peak
<b>Maximum OFF current</b>	Jumper J6 installed: 200µA; J6 removed: 30µA
<b>Base power required 5V</b>	70mA
<b>OFF to ON response</b>	0.5 ms
<b>ON to OFF response</b>	0.5 ms
<b>Terminal type</b>	Removable (D2-16IOCON)
<b>Status indicators</b>	Logic Side
<b>Weight</b>	2.0 oz. (25g)
<b>Fuses</b>	None
<b>External DC required</b>	24VDC +/-10% @ 50mA
<b>External DC overvoltage shutdown</b>	27V, outputs are restored when voltage is within limits



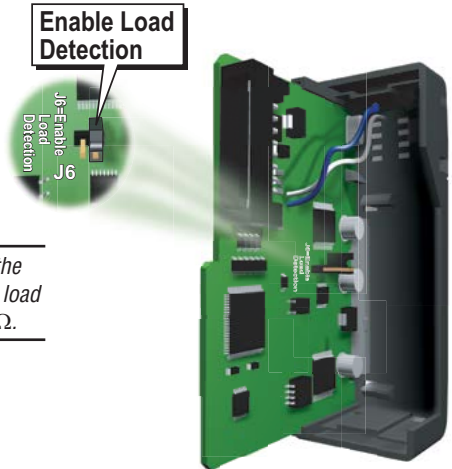
When the A/B switch is in the A position, the LEDs display the output status of the module's first 8 output points. Position B displays the output status of the module's second group of 8 output points.

## F2-16TD1P, DC Output With Fault Protection, continued

This module detects the following fault statuses and turns the related X bit(s) on.

1. Missing external 24VDC for the module
2. Open load
3. Over temperature (the output is shut down)
4. Over load current (the output is shut down)

Fault Status	X bit Fault Status Indication
Missing external 24VDC	All 16 X bits are on.
Open load	Only the X bit assigned to the faulted output is on
Over temperature	
Over load current	



**NOTE:** Open load detection can be disabled by removing the jumper switch J6 on the module PC board. Disable if the load might be energized by 200µA, or load resistance is > 56kΩ.

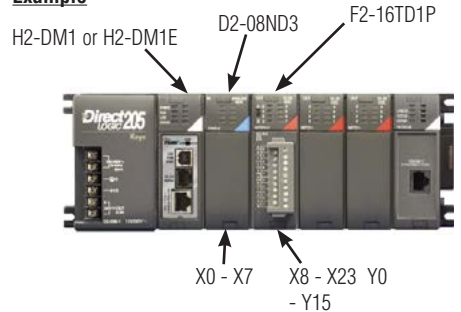
When this module is installed, 16 X bits are automatically assigned as fault status indicators. Each X bit indicates the fault status of a particular output.

In this example, X8-X23 are assigned as fault status indicators.

- X8: Fault status indicator for Y0
- X9: Fault status indicator for Y1
- ↓
- X22: Fault status indicator for Y14
- X23: Fault status indicator for Y15

The fault status indicators (X bits) will automatically reset once the fault condition is corrected. Over temperature and over load can be reset by turning the assigned output off or power cycling the PLC.

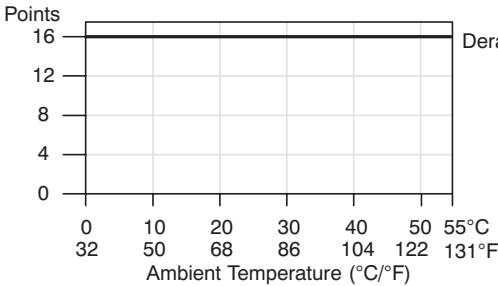
**Example**



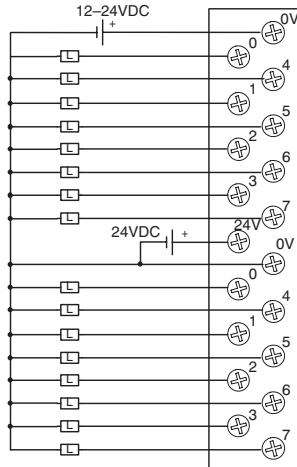
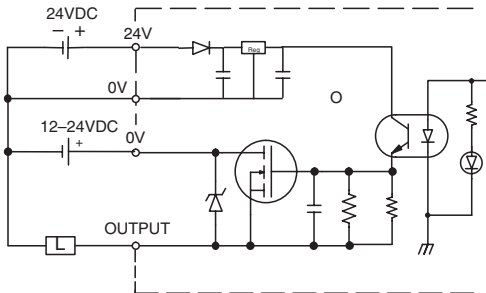
Fault Status	Operation
Missing external 24VDC	Apply external 24VDC
Open load	Connect the load.
Over temperature	Turn the output (Y bit) off or power cycle the PLC
Over load current	

# F2-16TD2P, DC Output with Fault Protection

F2-16TD2P DC Output with Fault Protection	
<b>Inputs per module</b>	16 (status indication)
<b>Outputs per module</b>	16 (current sourcing)
<b>Commons per module</b>	1
<b>Output type</b>	NMOS FET (open source)
<b>Operating voltage</b>	10.2–26.4 VDC, external
<b>Peak voltage</b>	40VDC
<b>AC frequency</b>	N/A
<b>ON voltage drop</b>	0.7 V (output current 0.5 A)
<b>Overcurrent trip</b>	0.6 A min., 1.2 A max.
<b>Maximum load current</b>	0.25 A continuous, 0.5 A peak
<b>Maximum OFF current</b>	Jumper J6 installed: 200µA; J6 removed: 30µA
<b>Base power required 5V</b>	70mA
<b>OFF to ON response</b>	0.5 ms
<b>ON to OFF response</b>	0.5 ms
<b>Terminal type</b>	Removable (D2-16IOCON)
<b>Status indicators</b>	Logic Side
<b>Weight</b>	2.0 oz. (25g)
<b>Fuses</b>	None
<b>External DC required</b>	24VDC ±10% @ 50mA
<b>External DC overvoltage shutdown</b>	27V, outputs are restored when voltage is within limits



Derating Chart



When the A/B switch is in the A position, the LEDs display the output status of the module's first 8 output points. Position B displays the output status of the module's second group of 8 output points.

## F2-16TD2P, DC Output With Fault Protection, continued

This module detects the following fault statuses and turns the related X bit(s) on.

1. Missing external 24VDC for the module
2. Open load
3. Over temperature (the output is shut down)
4. Over load current (the output is shut down)

Fault Status	X bit Fault Status Indication
Missing external 24VDC	All 16 X bits are on.
Open load	Only the X bit assigned to the faulted output is on
Over temperature	
Over load current	



**NOTE:** Open load detection can be disabled by removing the jumper switch J6 on the module PC board. Disable if the load might be energized by 200µA, or load resistance is > 56kΩ.

When this module is installed, 16 X bits are automatically assigned as fault status indicators. Each X bit indicates the fault status of a particular output.

In this example, X8-X23 are assigned as fault status indicators.

X8: Fault status indicator for Y0

X9: Fault status indicator for Y1

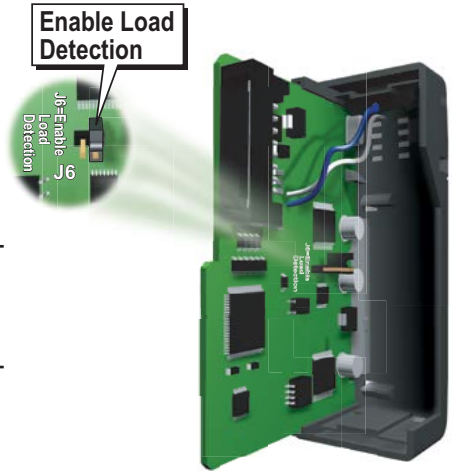


X22: Fault status indicator for Y14

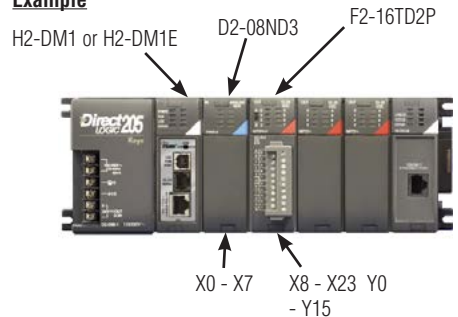
X23: Fault status indicator for Y15

The fault status indicators (X bits) will automatically reset once the fault condition is corrected. Over temperature and over load can be reset by turning the assigned output off or power cycling the PLC.

Fault Status	Operation
Missing external 24VDC	Apply external 24VDC
Open load	Connect the load.
Over temperature	Turn the output (Y bit) off or power cycle the PLC
Over load current	

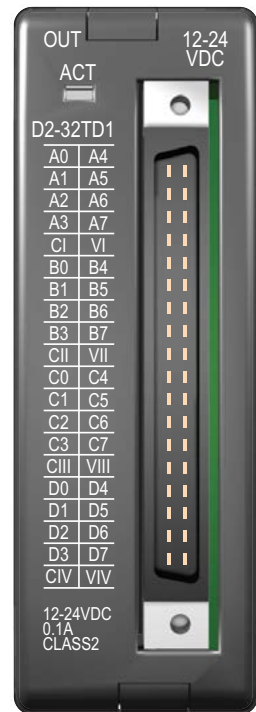
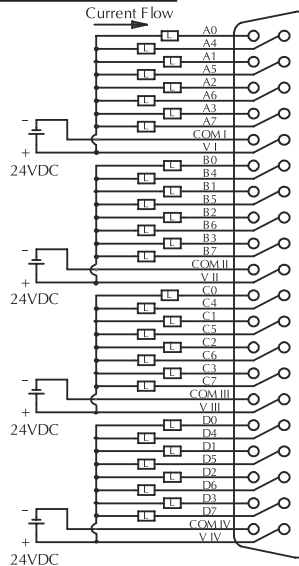
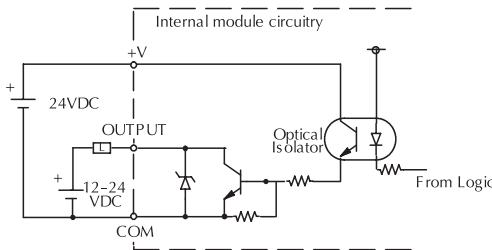
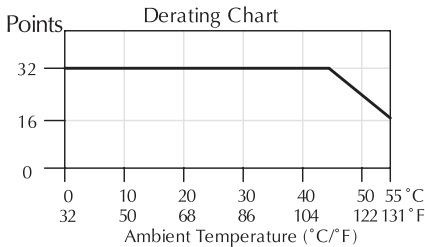


### Example



## D2-32TD1, DC Output

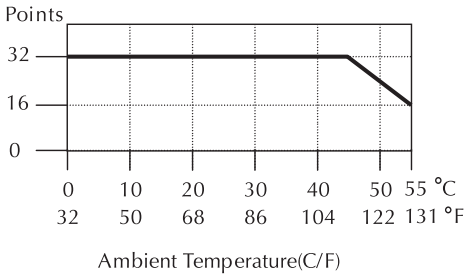
D2-32TD1 DC Output	
<b>Outputs per Module</b>	32 (current sinking)
<b>Commons per Module</b>	4 (8 I/O terminal points)
<b>Output Type</b>	NPN open collector
<b>Operating Voltage</b>	12–24 VDC
<b>Peak Voltage</b>	30VDC
<b>ON Voltage Drop</b>	0.5 VDC maximum
<b>Minimum Load Current</b>	0.2 mA
<b>Max Load Current</b>	0.1 A/point; 3.2 A per module
<b>Max Leakage Current</b>	0.1 mA @ 30VDC
<b>Max Inrush Current</b>	150mA for 10ms
<b>Base Power Required 5VDC</b>	350mA
<b>OFF to ON Response</b>	0.5 ms
<b>ON to OFF Response</b>	0.5 ms
<b>Terminal Type (not included)</b>	Removable 40-pin connector†
<b>Status Indicator</b>	Module activity (no I/O status indicators)
<b>Weight</b>	2.1 oz. (60g)
<b>Fuses</b>	None
<b>External DC Power Required</b>	20–28 VDC max. 120mA (all points on)
<b>ZIPLink Module</b>	ZL-RTB40 (Feedthrough) ZL-RFU40 (Fuse)
<b>ZIPLink Cable</b>	ZL-D24-CBL40 (0.5 m) ZL-D24-CBL40-1 (1.0 m) ZL-D24-CBL40-2 (2.0 m) ZL-D24-CBL40-1P (1.0 m Pigtail) ZL-D24-CBL40-2P (2.0 m Pigtail)
<i>ZIPLink connector is recommended or purchase custom connector separately.</i>	



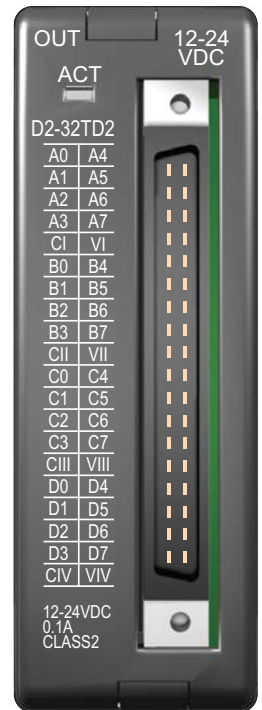
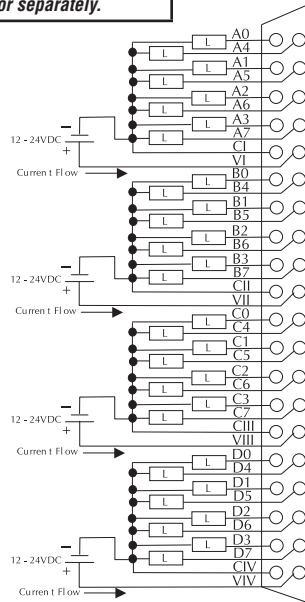
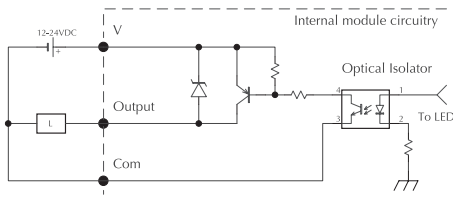
## D2-32TD2, DC Output

D2-32TD2 DC Output	
<b>Outputs per Module</b>	32 (current sourcing)
<b>Commons per Module</b>	4 (8 I/O terminal points)
<b>Output Type</b>	Transistor
<b>Operating Voltage</b>	12 to 24 VDC
<b>Peak Voltage</b>	30VDC
<b>ON Voltage Drop</b>	0.5 VDC @ 0.1 A
<b>Minimum Load Current</b>	0.2 mA
<b>Max Load Current</b>	0.1 A/point; 0.8 A/common
<b>Max Leakage Current</b>	0.1 mA @ 30VDC
<b>Max Inrush Current</b>	150mA @ 10ms
<b>Base Power Required 5VDC</b>	350mA
<b>OFF to ON Response</b>	0.5 ms
<b>ON to OFF Response</b>	0.5 ms
<b>Terminal Type (not included)</b>	Removable 40-pin connector <sup>1</sup>
<b>Status Indicator</b>	Module activity (no I/O status indicators)
<b>Weight</b>	2.1 oz (60g)
<b>Fuses</b>	None
<b>ZIPLink Module</b>	ZL-RTB40 (Feedthrough) ZL-RFU40 (Fuse)
<b>ZIPLink Cable</b>	ZL-D24-CBL40 (0.5 m) ZL-D24-CBL40-1 (1.0 m) ZL-D24-CBL40-2 (2.0 m) ZL-D24-CBL40-1P (1.0 m Pigtail) ZL-D24-CBL40-2P (2.0 m Pigtail)
<i>ZIPLink connector is recommended or purchase custom connector separately.</i>	

Derating Chart

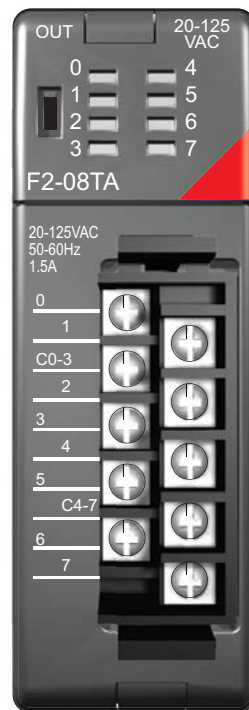
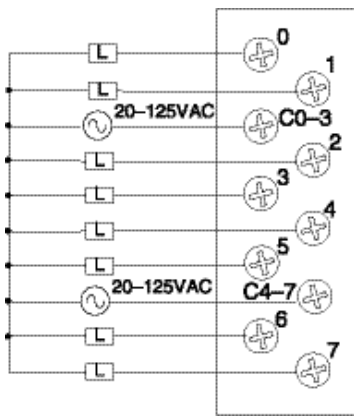
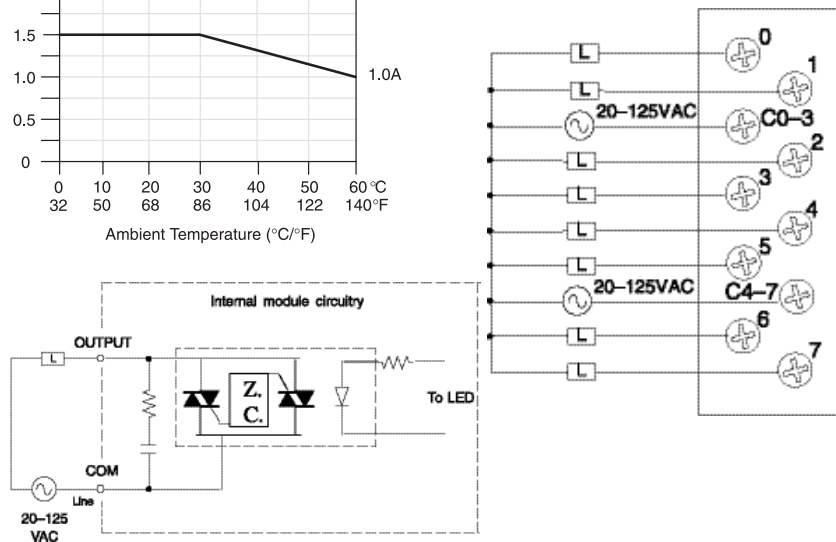
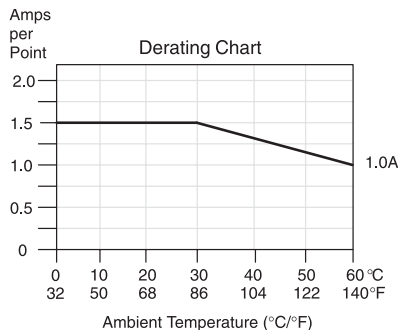


Equivalent Input Circuit



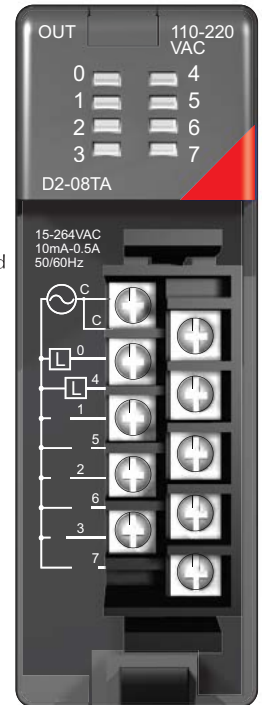
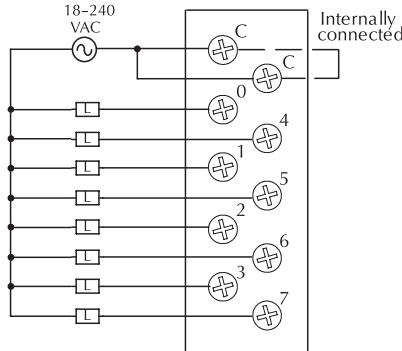
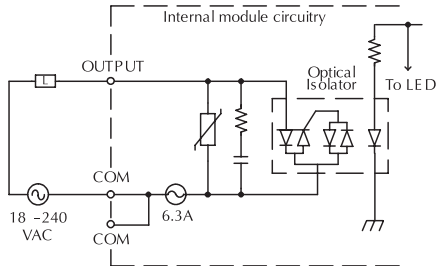
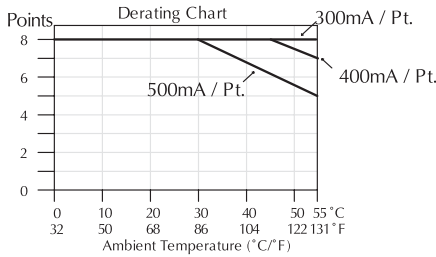
## F2-08TA, AC Output

F2-08TA AC Output	
<b>Outputs per Module</b>	8
<b>Commons per Module</b>	2 (Isolated)
<b>Output Type</b>	SSR (Triac with zero crossover)
<b>Operating Voltage</b>	24–140 VAC
<b>Peak Voltage</b>	140VAC
<b>ON Voltage Drop</b>	1.6 V(rms) @ 1.5 A
<b>AC Frequency</b>	47 to 63 Hz
<b>Minimum Load Current</b>	50mA
<b>Max Load Current</b>	1.5 A / pt @ 30°C 1.0 A / pt @ 60°C 4.0 A / common; 8.0 A / module @ 60°C
<b>Max Leakage Current</b>	0.7 mA(rms)
<b>Peak One Cycle Surge Current</b>	15A
<b>Base Power Required 5VDC</b>	250mA
<b>OFF to ON Response</b>	0.5 ms - 1/2 cycle
<b>ON to OFF Response</b>	0.5 ms - 1/2 cycle
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	3.5 oz.
<b>Fuses</b>	None
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)



## D2-08TA, AC Output

D2-08TA AC Output	
<b>Outputs per Module</b>	8
<b>Commons per Module</b>	1 (2 I/O terminal points)
<b>Output Type</b>	SSR (Triac)
<b>Operating Voltage</b>	15–264 VAC
<b>Peak Voltage</b>	264VAC
<b>ON Voltage Drop</b>	< 1.5 VAC (>0.1 A) < 3.0 VAC (<0.1 A)
<b>AC Frequency</b>	47 to 63 Hz
<b>Minimum Load Current</b>	10mA
<b>Max Load Current</b>	0.5 A/point; 4A/common
<b>Max Leakage Current</b>	4mA (264VAC, 60Hz) 1.2 mA (100VAC, 60Hz) 0.9 mA (100VAC, 50Hz)
<b>Max Inrush Current</b>	10A for 10ms
<b>Base Power Required 5VDC</b>	250mA
<b>OFF to ON Response</b>	1ms
<b>ON to OFF Response</b>	1ms + 1/2 cycle
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.8 oz. (80g)
<b>Fuses</b>	1 per common, 6.3 A slow blow, non-replaceable
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)



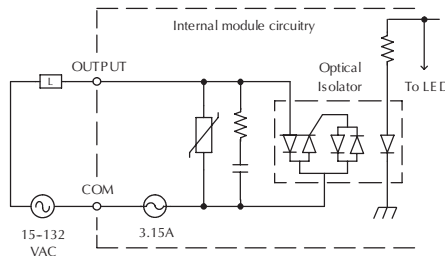
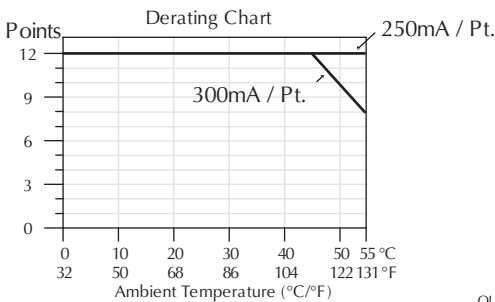
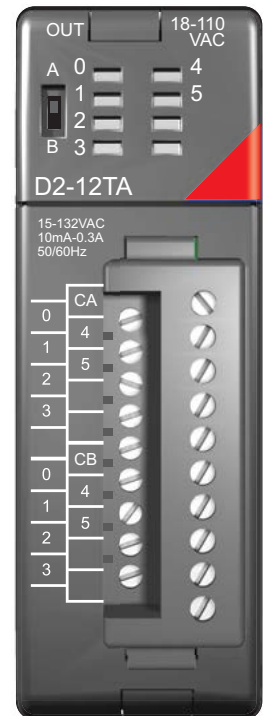
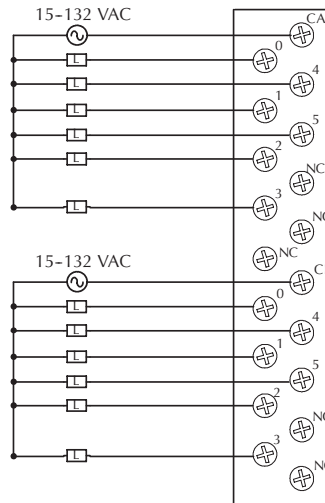


## D2-12TA, AC Output

D2-12TA AC Output	
<b>Outputs per Module</b>	12
<b>Outputs Points Consumed</b>	16 (four unused, see chart right)
<b>Commons per Module</b>	2 (isolated)
<b>Output Type</b>	SSR (Triac)
<b>Operating Voltage</b>	15-132 VAC
<b>Peak Voltage</b>	132VAC
<b>ON Voltage Drop</b>	< 1.5 VAC (>50mA) < 4.0 VAC (<50mA)
<b>AC Frequency</b>	47 to 63 Hz
<b>Minimum Load Current</b>	10mA
<b>Max Load Current</b>	0.3 A /point; 1.8 A/common
<b>Max Leakage Current</b>	2mA (132VAC, 60Hz)
<b>Max Inrush Current</b>	10A for 10ms
<b>Base Power Required 5VDC</b>	350mA
<b>OFF to ON Response</b>	1ms
<b>ON to OFF Response</b>	1ms + 1/2 cycle
<b>Terminal Type (included)</b>	Removable; D2-16IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.8 oz. (80g)
<b>Fuses</b>	(2) 1 per common 3.15 A slow blow, replaceable Order D2-FUSE-1 (5 per pack)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough) ZL-RFU20 (Fuse)
<b>ZIPLink Cable</b>	ZL-D2-CBL19 (0.5 m) ZL-D2-CBL19-1 (1.0 m) ZL-D2-CBL19-2 (2.0 m) ZL-D2-CBL19-1P (1.0 m Pigtail) ZL-D2-CBL19-2P (2.0 m Pigtail)

Addresses Used			
Points	Used?	Points	Used?
Yn+0	Yes	Yn+8	Yes
Yn+1	Yes	Yn+9	Yes
Yn+2	Yes	Yn+10	Yes
Yn+3	Yes	Yn+11	Yes
Yn+4	Yes	Yn+12	Yes
Yn+5	Yes	Yn+13	Yes
Yn+6	No	Yn+14	No
Yn+7	No	Yn+15	No

Yn is the starting address

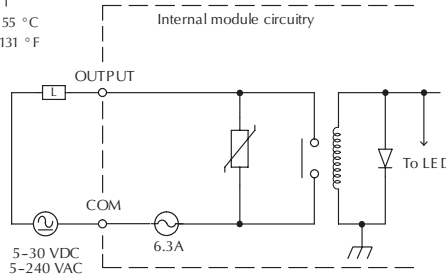
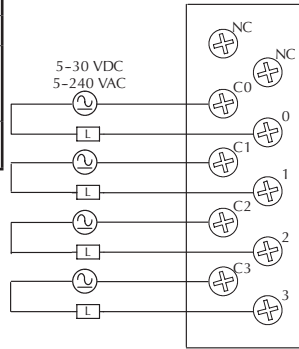
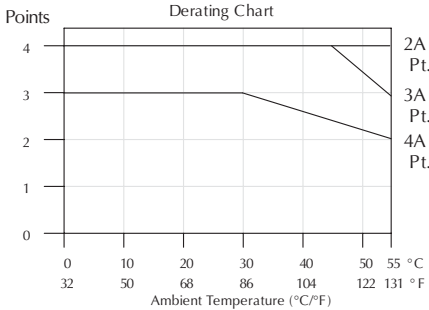


# D2-04TRS, Relay Output

D2-04TRS Relay Output	
<b>Outputs per Module</b>	4
<b>Outputs Points Consumed</b>	8 (only 1st 4pts are used)
<b>Commons per Module</b>	4 (isolated)
<b>Output Type</b>	Relay, form A (SPST)
<b>Operating Voltage</b>	5–30 VDC / 5–240 VAC
<b>Peak Voltage</b>	30 VDC, 264 VAC
<b>ON Voltage Drop</b>	0.72 VDC maximum
<b>AC Frequency</b>	47 to 63 Hz
<b>Minimum Load Current</b>	10mA
<b>Max Load Current (resistive)</b>	4A/point; 8A/module (resistive)
<b>Max Leakage Current</b>	0.1 mA @ 264VAC
<b>Max Inrush Current</b>	5A for < 10ms
<b>Base Power Required 5VDC</b>	250 mA
<b>OFF to ON Response</b>	10ms
<b>ON to OFF Response</b>	10ms
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	2.8 oz. (80g)
<b>Fuses</b>	1 per point 6.3 A slow blow, replaceable Order D2-FUSE-3 (5 per pack)
<b>ZIPLink Module*</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable*</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)
<b>*D2-04TRS outputs are derated not to exceed 2 Amps per point and 2 Amps per common when using the ZIPLink wiring system.</b>	

Typical Relay Life (Operations)				
Voltage & Load Current				
Type of Load	1A	2A	3A	4A
24VDC Resistive	500k	200k	100k	50k
24VDC Solenoid <sup>1</sup>	100k	40k	–	–
110VAC Resistive	500k	250k	150k	100k
110VAC Solenoid <sup>2</sup>	200k	100k	50k	–
220VAC Resistive	350k	150k	100k	50k
220VAC Solenoid <sup>3</sup>	100k	50k	–	–

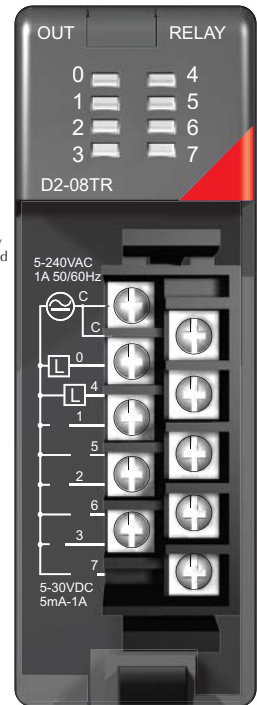
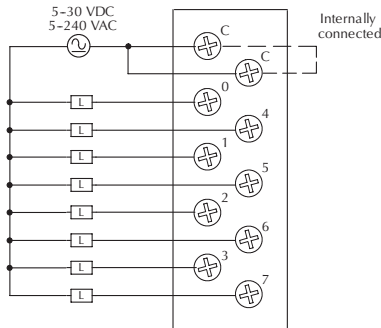
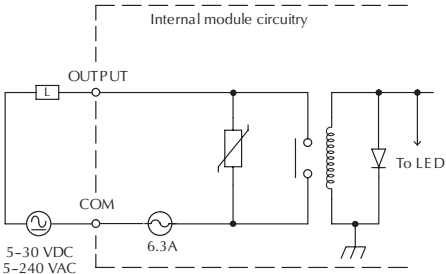
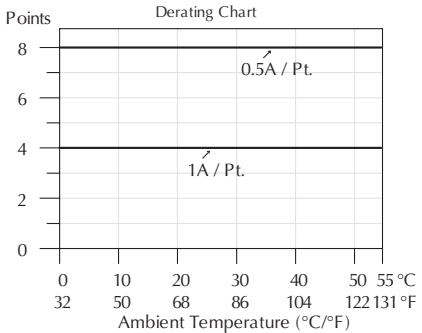
1. At 24VDC solenoid (inductive) loads over 2A cannot be used.
2. At 100VAC solenoid (inductive) loads over 3A cannot be used.
3. At 220VAC solenoid (inductive) loads over 2A cannot be used.



## D2-08TR, Relay Output

D2-08TR Relay Output	
<b>Outputs per Module</b>	8
<b>Outputs Points Consumed</b>	8
<b>Commons per Module</b>	1 (2 I/O terminals)
<b>Output Type</b>	Relay, form A (SPST)
<b>Operating Voltage</b>	5-30 VDC; 5-240 VAC
<b>Peak Voltage</b>	30VDC, 264VAC
<b>ON Voltage Drop</b>	N/A
<b>AC Frequency</b>	47 to 60 Hz
<b>Minimum Load Current</b>	5mA @ 5VDC
<b>Max Load Current (resistive)</b>	1A/point; 4A/common
<b>Max Leakage Current</b>	0.1 mA @265VAC
<b>Max Inrush Current</b>	Output: 3A for 10ms Common: 10A for 10ms
<b>Base Power Required 5VDC</b>	250mA
<b>OFF to ON Response</b>	12ms
<b>ON to OFF Response</b>	10ms
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	3.9 oz. (110g)
<b>Fuses</b>	One 6.3 A slow blow, replaceable Order D2-FUSE-3 (5 per pack)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)

Typical Relay Life (Operations)		
Voltage/Load	Current	Closures
24VDC Resistive	1A	500k
24VDC Solenoid		100k
110VAC Resistive		500k
110VAC Solenoid		200k
220VAC Resistive		350k
220VAC Solenoid		100k



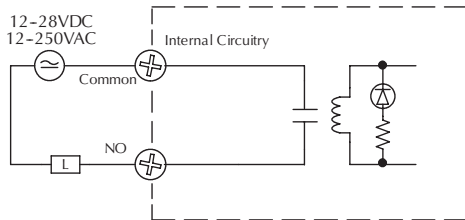
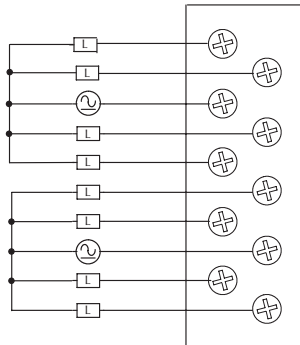
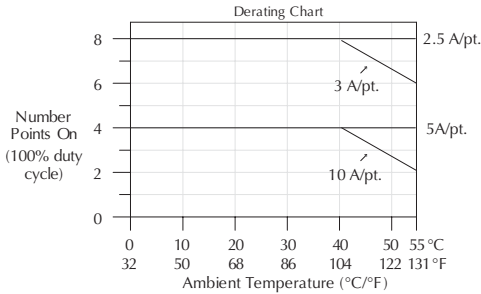
# F2-08TR, Relay Output

F2-08TR Relay Output	
<b>Outputs per Module</b>	8
<b>Outputs Points Consumed</b>	8
<b>Commons per Module</b>	2 (isolated), 4-pts per common
<b>Output Type</b>	8, Form A (SPST normally open)
<b>Operating Voltage</b>	7A @ 12–28 VDC, 12–250 VAC; 0.5 A @ 120VDC
<b>Peak Voltage</b>	150VDC, 265VAC
<b>ON Voltage Drop</b>	N/A
<b>AC Frequency</b>	47 to 63 Hz
<b>Minimum Load Current</b>	10mA @ 12VDC
<b>Max Load Current (resistive)</b>	10A/point <sup>3</sup> (Subject to derating) Max of 10A/common
<b>Max Leakage Current</b>	N/A
<b>Max Inrush Current</b>	12A
<b>Base Power Required 5VDC</b>	670mA
<b>OFF to ON Response</b>	15ms (typical)
<b>ON to OFF Response</b>	5ms (typical)
<b>Terminal Type (included)</b>	Removable; D2-8IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	5.5 oz. (156g)
<b>Fuses</b>	None
<b>ZIPLink Module*</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable*</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)

**\*F2-08TR outputs are derated not to exceed 2 Amps per point and 4 Amps per common when using the ZIPLink wiring system.**

Typical Relay Life <sup>1</sup> (Operations) at Room Temperature			
Voltage & Type of Load <sup>2</sup>	Load Current		
	50mA	5A	7A
24VDC Resistive	10M	600k	300k
24VDC Solenoid	–	150k	75k
110VDC Resistive	–	600k	300k
110VDC Solenoid	–	500k	200k
220VAC Resistive	–	300k	150k
220VAC Solenoid	–	250k	100k

- Contact life may be extended beyond those values shown with the use of arc suppression techniques described in the DL205 User Manual. Since these modules have no leakage current, they do not have built-in snubber. For example, if you place a diode across a 24VDC inductive load, you can significantly increase the life of the relay.
- At 120VDC 0.5 A resistive load, contact life cycle is 200k cycles.
- Normally closed contacts have 1/2 the current handling capability of the normally open contacts.



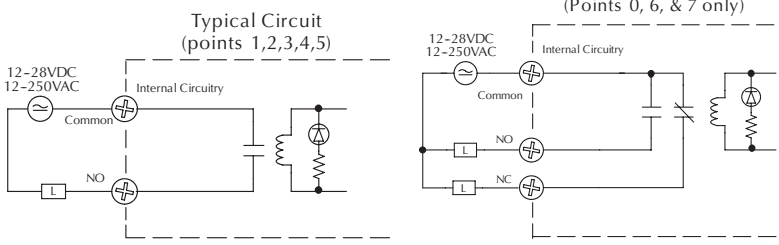
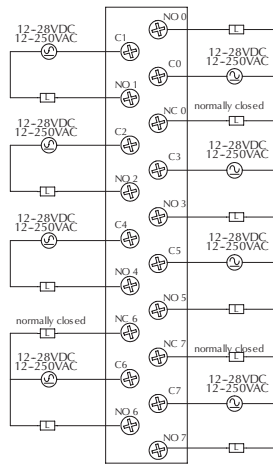
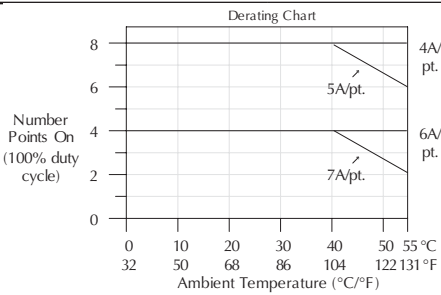
# F2-08TRS, Relay Output

F2-08TRS Relay Output	
Outputs per Module	8
Outputs Points Consumed	8
Commons per Module	8 (isolated)
Output Type	3, Form C (SPDT) 5, Form A (SPST normally open)
Operating Voltage	7A @ 12-28 VDC, 12-250 VAC 0.5 A @ 120VDC
Peak Voltage	150VDC, 265VAC
ON Voltage Drop	N/A
AC Frequency	47 to 63Hz
Minimum Load Current	10mA @ 12VDC
Max Load Current (resistive)	7A/point <sup>3</sup> (subject to derating)
Max Leakage Current	N/A
Max Inrush Current	12A
Base Power Required 5VDC	670mA
OFF to ON Response	15ms (typical)
ON to OFF Response	5ms (typical)
Terminal Type (included)	Removable; D2-16IOCON
Status Indicator	Logic side
Weight	5.5 oz. (156g)
Fuses	None
ZIPLink Module*	ZL-RTB20 (Feedthrough)
ZIPLink Cable*	ZL-D2-CBL19 (0.5 m) ZL-D2-CBL19-1 (1.0 m) ZL-D2-CBL19-2 (2.0 m) ZL-D2-CBL19-1P (1.0 m Pigtail) ZL-D2-CBL19-2P (2.0 m Pigtail)

\*F2-08TRS outputs are derated not to exceed 2 Amps per point and 2 Amps per common when using the ZIPLink wiring system.

Typical Relay Life <sup>1</sup> (Operations) at Room Temperature			
Voltage & Type of Load <sup>2</sup>	Load Current		
	50mA	5A	7A
24VDC Resistive	10M	600k	300k
24VDC Solenoid	—	150k	75k
110VDC Resistive	—	600k	300k
110VDC Solenoid	—	500k	200k
220VAC Resistive	—	300k	150k
220VAC Solenoid	—	250k	100k

1. Contact life may be extended beyond these values shown with the use of arc suppression techniques described in the DL205 User Manual. Since these modules have no leakage current, they do not have built-in snubber. For example, if you place a diode across a 24VDC inductive load, you can significantly increase the life of the relay.  
 2. At 120VDC 0.5 A resistive load, contact life cycle is 200k cycles.  
 3. Normally closed contacts have 1/2 the current handling capability of the normally open contacts.



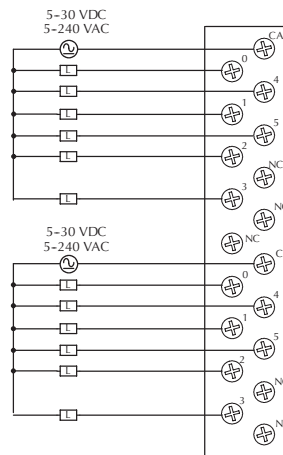
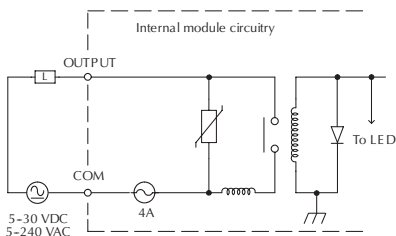
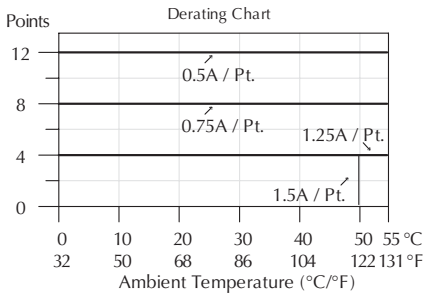
# D2-12TR, Relay Output

D2-12TR Relay Output	
<b>Outputs per Module</b>	12
<b>Outputs Points Consumed</b>	16 (four unused, see chart below)
<b>Commons per Module</b>	2 (6-pts. per common)
<b>Output Type</b>	Relay, form A (SPST)
<b>Operating Voltage</b>	5-30 VDC; 5-240 VAC
<b>Peak Voltage</b>	30VDC; 264VAC
<b>ON Voltage Drop</b>	N/A
<b>AC Frequency</b>	47 to 60 Hz
<b>Minimum Load Current</b>	5mA @ 5VDC
<b>Max Load Current (resistive)</b>	1.5 A/point; Max of 3A/common
<b>Max Leakage Current</b>	0.1 mA @ 265VAC
<b>Max Inrush Current</b>	Output: 3A for 10ms Common: 10A for 10ms
<b>Base Power Required 5VDC</b>	450mA
<b>OFF to ON Response</b>	10ms
<b>ON to OFF Response</b>	10ms
<b>Terminal Type (included)</b>	Removable; D2-16IOCON
<b>Status Indicator</b>	Logic side
<b>Weight</b>	4.6 oz. (130g)
<b>Fuses</b>	(2) 4A slow blow, replaceable Order D2-FUSE-4 (5 per pack)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough) ZL-RFU20 (Fuse)
<b>ZIPLink Cable</b>	ZL-D2-CBL19 (0.5 m) ZL-D2-CBL19-1 (1.0 m) ZL-D2-CBL19-2 (2.0 m) ZL-D2-CBL19-1P (1.0 m Pigtail) ZL-D2-CBL19-2P (2.0 m Pigtail)

Typical Relay Life (Operations)		
Voltage/Load	Current	Closures
24VDC Resistive	1A	500k
24VDC Solenoid		100k
110VAC Resistive		500k
110VAC Solenoid		200k
220VAC Resistive		350k
220VAC Solenoid		100k

Addresses Used			
Points	Used?	Points	Used?
Yn+0	Yes	Yn+8	Yes
Yn+1	Yes	Yn+9	Yes
Yn+2	Yes	Yn+10	Yes
Yn+3	Yes	Yn+11	Yes
Yn+4	Yes	Yn+12	Yes
Yn+5	Yes	Yn+13	Yes
Yn+6	No	Yn+14	No
Yn+7	No	Yn+15	No

Yn is the starting address



# D2-08CDR, 4 pt. DC Input / 4pt. Relay Output

D2-08CDR 4-pt. DC In / 4pt. Relay Out	
<b>General Specifications</b>	
Base Power Required 5VDC	200mA
Terminal Type (included)	Removable; D2-8IOCON
Status Indicator	Logic side
Weight	3.5 oz. (100g)
<b>Input Specifications</b>	
Inputs per Module	4 (sink/source)
Input Points Consumed	8 (only first 4-pt. are used)
Commons per Module	1
Input Voltage Range	20-28 VDC
Peak Voltage	30VDC
ON Voltage Level	19VDC minimum
OFF Voltage Level	7VDC maximum
AC Frequency	N/A
Input Impedance	4.7 kΩ
Input Current	5mA @ 24VDC
Maximum Current	8mA @ 30VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	1.5 mA
OFF to ON Response	1 to 10 ms
ON to OFF Response	1 to 10 ms
Fuses (input circuits)	None
<b>Output Specifications</b>	
Outputs per Module	4
Output Points Consumed	8 (only first 4-pt. are used)
Commons per Module	1

<b>Output Type</b>	Relay, form A (SPST)
<b>Operating Voltage</b>	5-30 VDC; 5-240 VAC
<b>Peak Voltage</b>	30VDC; 264VAC
<b>ON Voltage Drop</b>	N/A
<b>AC Frequency</b>	47 to 63 Hz
<b>Minimum Load Current</b>	5mA @ 5VDC
<b>Max Load Current (resistive)</b>	1A/point ; 4A/module
<b>Max Leakage Current</b>	0.1 mA @ 264VAC
<b>Max Inrush Current</b>	3A for < 100 ms, 10A for < 10ms (common)
<b>OFF to ON Response</b>	12ms
<b>ON to OFF Response</b>	10ms
<b>Fuses (output circuits)</b>	1 (6.3 A slow blow, replaceable); Order D2-FUSE-3 (5 per pack)
<b>ZIPLink Module</b>	ZL-RTB20 (Feedthrough)
<b>ZIPLink Cable</b>	ZL-D2-CBL10 (0.5 m) ZL-D2-CBL10-1 (1.0 m) ZL-D2-CBL10-2 (2.0 m)

Typical Relay Life (Operations)		
Voltage/Load	Current	Closures
24VDC Resistive	1A	500k
24VDC Solenoid		100k
110VAC Resistive		500k
110VAC Solenoid		200k
220VAC Resistive		350k
220VAC Solenoid		100k

