

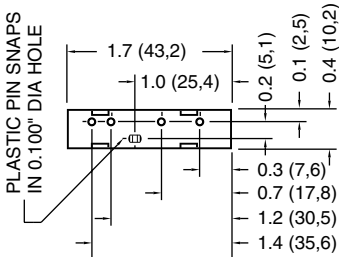
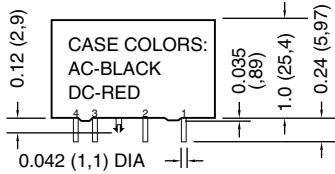
# DIGITAL I/O MODULES

## SM SERIES OUTPUT MODULES



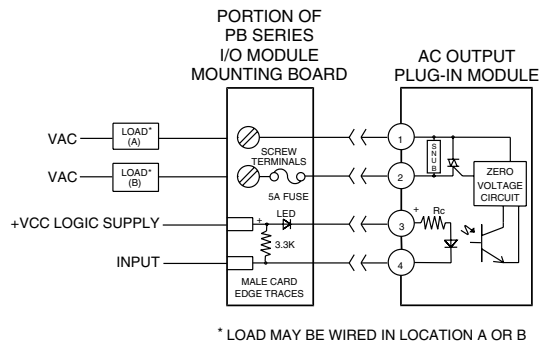
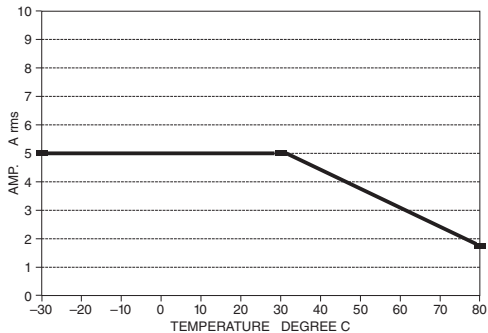
### FEATURES:

- CE Compliant
- UL Recognized/Horse Power Rated (E46203)/CSA Certified (38595)
- AC Modules have High Current Thyristor with 100 Amp Surge Capability
- Zero or Random Turn-On Available in AC Modules
- Plug into Mounting Boards for SM or 0.6" Modules
- 4 kV Optical Isolation (1500 VAC Optical Isolation for FET DC Output Modules)
- Industry Standard Packaging
- 3.5 Amp AC Modules Provide Extra Switching Capability
- 5.0 Amp AC (SMOAC5AH) AND DC Modules Available

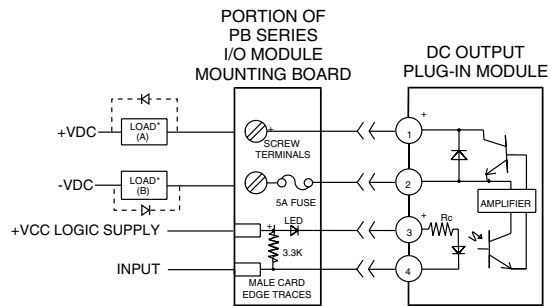


DIMENSIONS: INCHES (MILLIMETERS)  
TOLERANCE:  $\pm 0.020$  ( $\pm 0,50$ )

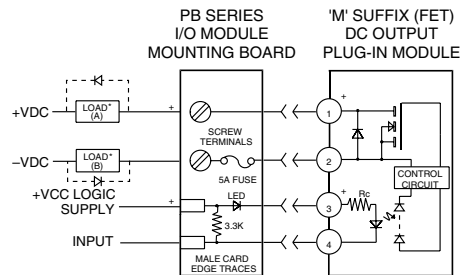
### DERATING CURVE FOR SMOAC5AH ONLY:



\* LOAD MAY BE WIRED IN LOCATION A OR B



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DC INDUCTIVE LOADS MUST BE DIODE SUPPRESSED TO PREVENT DAMAGE TO THE I/O MODULE.



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(EQUIVALENT CIRCUIT DIAGRAMS)

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# DIGITAL I/O MODULES

## SM SERIES OUTPUT MODULES

### INPUT SPECIFICATIONS: (1)

Model Number	SMOAC5 SMOAC5A SMOAC5AH SMOAC5AR SMOAC5R	SMODC5 SMODC5A SMODC5F SMODC5MA SMODC5MC SMODC5ML	SMOAC24 SMOAC24A SMODC24	Units
Nominal Voltage	5.0	5.0	24.0	VDC
Minimum Voltage (2)	2.75	2.75	18.0	VDC
Maximum Voltage	8.0	8.0	32.0	VDC
Drop-Out Voltage	1.0	1.0	1.0	VDC
Maximum Current (3)	20.0	18.0	13.0	mA
Resistance (4)	220	250	2000	Ohms

### OUTPUT SPECIFICATIONS: (1)

Model Number	SMOAC5 SMOAC5R SMOAC24	SMOAC5A SMOAC5AR SMOAC24A	SMOAC5AH	SMODC5 SMODC24	SMODC5A	SMODC5F	SMODC5MA	SMODC5MC	SMODC5ML
Nominal Line Voltage	120 VAC	240 VAC	240 VAC	5-48 V	5-150 V	5-48 V	5-150 V	5-90 V	5-48 V
Minimum Line Voltage	12 VAC	24 VAC	24 VAC	3.0 V	3.0 V	3.0 V	1.0 V	1.0 V	1.0 V
Maximum Line Voltage	140 VAC	280 VAC	280 VAC	60 V	250 V	60 V	200 V	100 V	50 V
Max Off-State Voltage (5)	400 Vpeak	600 Vpeak	600 Vpeak	60 V	250 V	60 V	200 V	100 V	50 V
Max Off-State Leakage (6)	.1 mArms	.1 mArms	.1 mArms	10 µA	10 µA	1.0 mA	10 µA	10 µA	10 µA
Static Off-State dv/dt (7)	200 V/µsec	200 V/µsec	200 V/µsec	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Rated On-State Current (8)	3.5 Arms	3.5 Arms	5.0 A	3.0 A	1.0 A	3.0A	3.0 A	5.0 A	5.0 A
Min On-State Current	50 mArms	50 mArms	50 mArms	10 mA	10 mA	10 mA	1.0 mA	1.0 mA	1.0 mA
Max Surge Current (9)	100 Apeak	100 Apeak	100 Apeak	5.0 A	5.0 A	5.0 A	10 A	10 A	10 A
On-State Voltage Drop or Resistance (10)	1.6 V	1.6 V	1.6 V	1.5 V	1.5 V	1.5 V	0.25 Ω	0.10 Ω	0.05 Ω
H.P. Rating (13)	1/4 H.P.	1/4 H.P.	1/2 H.P.	N/A	N/A	N/A	N/A	N/A	N/A

### GENERAL SPECIFICATIONS: (1)

Model Number	SMOAC5 SMOAC5A SMOAC5AH SMOAC24 SMOAC24A	SMOAC5R SMOAC5AR	SMODC5 SMODC5A SMODC24	SMODC5F	SMODC5MA SMODC5MC SMODC5ML	Units
Operating Temperature Range	-30 to 80	-30 to 80	-30 to 80	-30 to 80	-30 to 80	°C
Storage Temperature Range	-40 to 100	-40 to 100	-40 to 100	-40 to 100	-40 to 100	°C
Maximum Turn-on Time (11)	8.33	0.1	0.1	0.025	1.0	mSec
Maximum Turn-off Time (11)	8.33	8.33	0.75	0.05	0.05	mSec
Input/Output Isolation Voltage (12)	4000	4000	4000	4000	1500	VAC
Input/Output Capacitance (typical)	8	8	8	8	8	pF
Line Frequency Range	47 to 63	47 to 63	DC	DC	DC	Hertz
Weight	.65 oz	.65 oz	.65 oz	.65 oz	.65 oz	

### TABLE OF MODEL NUMBER SUFFIXES IDENTIFYING OPTIONAL FEATURES

Suffix	Feature
A	High voltage versions (240 VAC for AC modules, 250 VDC for DC modules).
AH	High Voltage AC, 5 A
F	Fast-switching version of DC modules.
MA	FET output version of DC module, 3.0 A, 200 VDC.
MC	FET output version of DC module, 5.0 A, 100 VDC.
ML	FET output version of DC module, 5.0 A, 50 VDC.
R	Random AC voltage turn-on.

#### Notes:

- (1) Specifications apply to an ambient temperature of -30 to 80°C unless otherwise noted.
- (2) Without external LED status indicator. Add 1.7 volt for external LED if utilized.
- (3) At nominal input voltage, without external LED status indicator.
- (4) +/-10% at 25°C.
- (5) Maximum 1 minute duration for SMOAC modules when applied as a DC voltage rather than peak AC voltage.
- (6) At maximum line voltage, 25°C for SMOAC modules, and 80°C for SMODC modules.
- (7) Minimum dv/dt per EIA/NARM RS443, method RS397. dv/dt ratings do not apply to SMODC modules.
- (8) At 40°C, derate SMOAC modules by 58 mA/°C to 80°C; derate SMODC and SMODCxmA modules by 50 mA/°C to 80°C; derate SMODCxMC and SMODCxML modules by 125 mA/°C to 80°C. CSA rating of SMOAC modules is 3.0 Arms at 40°C. For SMOAC5AH see derating curve.
- (9) At 25°C. Maximum duration: 1 AC cycle for SMOAC modules, 1 second for SMODC modules.
- (10) At maximum rated on-state current and 25°C.
- (11) At maximum line voltage, maximum rated output current, nominal input voltage, 25°C. Switching speed of SMOAC modules based upon 60 Hz line frequency.
- (12) At 25°C for 1 second maximum duration.
- (13) 1/4 H.P. at 240 VAC, 1/8 H.P. at 120 VAC.

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