# M SERIES OUTPUT MODULES

- AC Modules have High Current Thyristors with 100 Amp Surge Capability
- Plug into mounting boards for 0.6" modules
- Zero or Random Turn-On Available in AC Modules
- 4kV Optical isolation (1500 VAC Isolation for FET DC Output Modules)
- UL Recognized, CSA Certified, CE Compliant
- Industry standard packaging and Color Coding Black (AC Output) Red (DC Output)

## SPECIFICATIONS (1)

*Input*

| Part Number | M-OAC5 | M-OAC5A | M-OAC5AH | M-OAC5AR | M-OAC5R |
|---|---|---|---|---|---|
| Nominal Voltage VDC | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Voltage VDC (2) | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 |
| Maximum Voltage VDC | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| Drop-out Voltage | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Maximum Current (3) | 20 | 20 | 20 | 20 | 20 |
| Resistance (4) | 220 | 220 | 220 | 220 | 220 |

*Output*

| | | | | | |
|---|---|---|---|---|---|
| Nominal Line Voltage | 120 VAC | 240 VAC | 240 VAC | 240 VAC | 120 VAC |
| Minimum Line Voltage | 12 VAC | 24 VAC | 24 VAC | 24 VAC | 12 VAC |
| Maximum Line Voltage | 140 VAC | 280 VAC | 280 VAC | 280 VAC | 140 VAC |
| Max Off-State Voltage (5) | 400 Vpeak | 600 Vpeak | 600 Vpeak | 600 Vpeak | 400 Vpeak |
| Max Off-State Leakage (6) | 0.1mArms | 0.1mArms | 0.1mArms | 0.1mArms | 0.1mArms |
| Static Off-State dv/dt (7) | 200 V/usec | 200 V/usec | 200 V/usec | 200 V/usec | 200 V/usec |
| Maximum Rated On-State Current (8) | 3.5 Arms | 3.5 Arms | 5.0 Arms | 3.5 Arms | 3.5 Arms |
| Minimum On-State Current | 50 mArms | 50 mArms | 50 mArms | 50 mArms | 50 mArms |
| Max Surge Current (9) | 100 Apeak | 100 Apeak | 100 Apeak | 100 Apeak | 100 Apeak |
| On-State Voltage Drop or Resistance (10) | 1.6 V | 1.6 V | 1.6 V | 1.6 V | 1.6 V |
| Maximum Turn-On Time [msec] (13) | 8.33 | 8.33 | 8.33 | 0.1 | 0.1 |
| Maximum Turn-Off Time [msec] (13) | 8.33 | 8.33 | 8.33 | 8.33 | 8.33 |
| Input/Output Isolation Voltage (14) | 4000 | 4000 | 4000 | 4000 | 4000 |
| Input/Output Capacitance | 8 | 8 | 8 | 8 | 8 |
| Operating Temperature Range | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C |
| Storage Temperature Range | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C |
| Line Frequency Range | 47 to 63 | 47 to 63 | 47 to 63 | 47 to 63 | 47 to 63 |
| Weight | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) |


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## SPECIFICATIONS (1)

*Input*

| Part Number | M-OAC24 | M-OAC24A | M-ODC5 | M-ODC5A | M-ODC5F |
|---|---|---|---|---|---|
| Nominal Voltage VDC | 24 | 24 | 5.0 | 5.0 | 5.0 |
| Minimum Voltage VDC (2) | 18 | 18 | 2.75 | 2.75 | 2.75 |
| Maximum Voltage VDC | 32 | 32 | 8.0 | 8.0 | 8.0 |
| Drop-out Voltage | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Maximum Current (3) | 13 | 13 | 18 | 18 | 18 |
| Resistance (4) | 2000 | 2000 | 250 | 250 | 250 |

*Output*

| | | | | | |
|---|---|---|---|---|---|
| Nominal Line Voltage | 120 VAC | 240 VAC | 5-48 VDC | 5-150 VDC | 5-48 VDC |
| Minimum Line Voltage | 12 VAC | 24 VAC | 3.0 VDC | 3.0 VDC | 3.0 VDC |
| Maximum Line Voltage | 140 VAC | 280 VAC | 60 VDC | 250 VDC | 60 VDC |
| Max Off-State Voltage (5) | 400 Vpeak | 600 Vpeak | 60 VDC | 250 VDC | 60 VDC |
| Max Off-State Leakage (6) | 0.1mArms | 0.1mArms | 10 uA | 10 uA | 10 uA |
| Static Off-State dv/dt (7) | 200 V/usec | 200 V/usec | N/A | N/A | N/A |
| Maximum Rated On-State Current (8) | 3.5 Arms | 3.5 Arms | 3.0 A | 1.0 A | 3.0 A |
| Minimum On-State Current | 50 mArms | 50 mArms | 10 mA | 10 mA | 10 mA |
| Max Surge Current (9) | 100 Apeak | 100 Apeak | 5.0 A | 5.0 A | 5.0 A |
| On-State Voltage Drop or Resistance (10) | 1.6 V | 1.6 V | 1.5 V | 1.5 V | 1.5 V |
| Maximum Turn-On Time [msec] (13) | 8.33 | 8.33 | 0.1 | 0.1 | 0.025 |
| Maximum Turn-Off Time [msec] (13) | 8.33 | 8.33 | 0.75 | 0.75 | 0.05 |
| Input/Output Isolation Voltage (14) | 4000 | 4000 | 4000 | 4000 | 4000 |
| Input/Output Capacitance | 8 | 8 | 8 | 8 | 8 |
| Operating Temperature Range | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C |
| Storage Temperature Range | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C |
| Line Frequency Range | 47 to 63 | 47 to 63 | DC | DC | DC |
| Weight | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) |

## SPECIFICATIONS (1)

*Input*

| Part Number | M-ODC5MA | M-ODC5MC | M-ODC5ML | M-ODC24 | M-ODC24A |
|---|---|---|---|---|---|
| Nominal Voltage VDC | 5.0 | 5.0 | 5.0 | 24 | 24 |
| Minimum Voltage VDC (2) | 2.75 | 2.75 | 2.75 | 18 | 18 |
| Maximum Voltage VDC | 8.0 | 8.0 | 8.0 | 32 | 32 |
| Drop-out Voltage | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Maximum Current (3) | 18 | 18 | 18 | 13 | 13 |
| Resistance (4) | 250 | 250 | 250 | 2000 | 2000 |

*Output*

| | | | | | |
|---|---|---|---|---|---|
| Nominal Line Voltage | 5-150 VDC | 5-90 VDC | 5-48 VDC | 5-48 VDC | 5-150 VDC |
| Minimum Line Voltage | 1.0 VDC | 1.0 VDC | 50 VDC | 60 VDC | 250 VDC |
| Maximum Line Voltage | 200 VDC | 100 VDC | 50 VDC | 60 VDC | 250 VDC |
| Max Off-State Voltage (5) | 200 VDC | 100 VDC | 50 VDC | 60 VDC | 250 VDC |
| Max Off-State Leakage (6) | 10 uA | 10 uA | 10 uA | 10 uA | 10 uA |
| Static Off-State dv/dt (7) | N/A | N/A | N/A | N/A | N/A |
| Maximum Rated On-State Current (8) | 3.0 A | 5.0 A | 1.0 A | 3.0 A | 1.0 A |
| Minimum On-State Current | 1.0 mA | 1.0 mA | 10 mA | 10 mA | 10 mA |
| Max Surge Current (9) | 10 A | 10 A | 10 A | 5.0 A | 5.0 A |
| On-State Voltage Drop or Resistance (10) | 0.25 Ohms | 0.10 Ohms | 0.05 Ohms | 1.5 V | 1.5 V |
| Maximum Turn-On Time [msec] (13) | 1.0 | 1.0 | 1.0 | 0.1 | 0.1 |
| Maximum Turn-Off Time [msec] (13) | 0.05 | 0.05 | 0.05 | 0.75 | 0.75 |
| Input/Output Isolation Voltage (14) | 1500 | 1500 | 1500 | 4000 | 4000 |
| Input/Output Capacitance | 8 | 8 | 8 | 8 | 8 |
| Operating Temperature Range | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C |
| Storage Temperature Range | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C |
| Line Frequency Range | DC | DC | DC | DC | DC |
| Weight | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) |


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**General 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 volts 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 OAC modules when applied as a DC voltage rather than a peek AC voltage.
(6) At maximum line voltage, 25°C for OAC modules, and 80°C for ODC modules.
(7) Minimum DV/DT per EIA/NARM RS433, method RS397, DV/DT ratings do not apply to DC output models
(8) At 40°C, derate OAC modules 58 mA/°C to 80°C, derate ODC. ODCxMC and ODCxML modules 50 mA/°C to 80°C. CSA rating of OAC modules is 3.0 Arms at 40°C.
(9) At 25°C for 1 second maximum duration: 1 AC cycle for AC modules, 1 second for DC modules.
(10) At maximum rated on-state current and 25°C.
(11) At maximum line voltage, maximum rated output current, nominal input voltage and 25°C. Switching speed of OAC modules is based upon 60 Hz line frequency.
(12) At 25°C for 1 second maximum duration.
(13) 1/3 H.P. at 240 VAC, 1/8 H.P. at 120 VAC.
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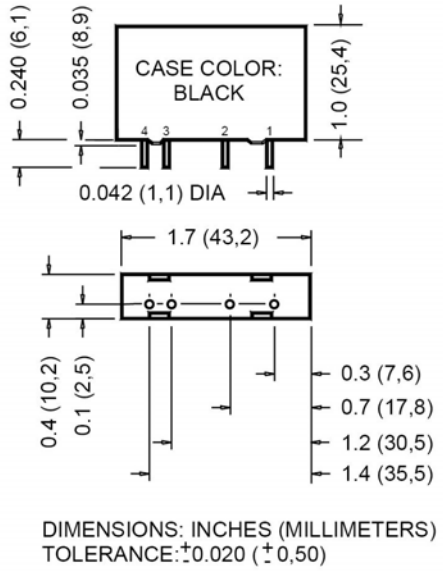
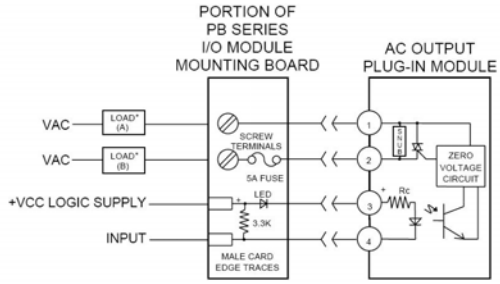
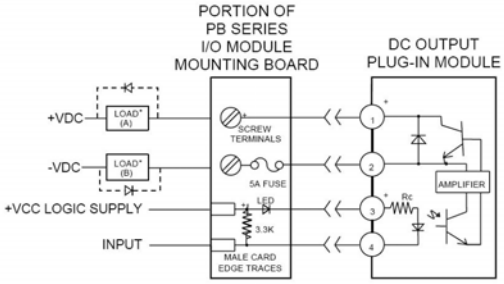
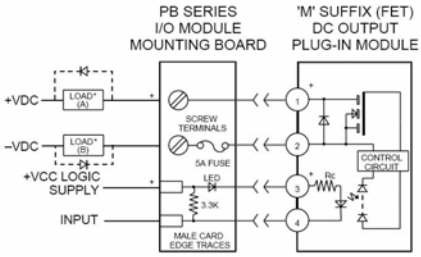
## MECHANICAL SPECIFICATIONS




* LOAD MAY BE WIRED IN LOCATION A OR B
DC INDUCTIVE LOADS MUST DIODE SUPPRESSED

## AGENCY APPROVALS

E46203 38595

Rev. 121311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## ⚠ DANGER / PELIGRO / DANGER /GEFAHR / PERICOLO / PERIGO

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH.**

- Disconnect all power before installing or working with this equipment.
- Verify all connections and replace all covers before turning on power.

**Failure to follow these instructions will result in death or serious injury.**

**RIESGO DE DESCARGA ELECTRICA O EXPLOSION.**

- Desconectar todos los suministros de energia a este equipo antes de trabajar con este equipo.
- Verificar todas las conexiones y colocar todas las tapas antes de energizer el equipo.

**El incumplimiento de estas instrucciones puede provocar la muerte o lesiones serias.**

**RISQUE DE DESCHARGE ELECTRIQUE OU EXPLOSION**

- Eteindre toutes les sources d'énergie de cet appareil avant de travailler dessus de cet appareil
- Vérifier tous connections, et remettre tous couverts en olace avant de mettre sous

**De non-suivi de ces instructions provoquera la mort ou des lésions sérieuses sérieuses.**

**GEFAHR EINES ELEKTRISCHE N SCHLAGES ODER EINER EXPLOSION.**

- Stellen Sie jeglichen Strom ab, der dieses Gerät versorgt, bevor Sie an dem Gerät Arbeiten durchführen
- Vor der Inbetriebnahme alle Anschlüsse überprüfen und alle Gehäuseteile montieren.

**Unterlassung dieser Anweisungen können zum Tode oder zu schweren Verletzungen führen.**

**RISCHIO DI SCOSSA ELETTRICA O DELL'ESPLOSI ONE.**

- Spenga tutta l'alimentazion e che fornisce questa apparecchiatu ra prima del lavorare a questa apparecchiatu ra
- Verificare tutti i collegamenti e sostituire tutte le coperture prima della rotazione sull'alimentazi one

**L'omissione di seguire queste istruz ioni provocherà la morte o di lesioni serie**

**RISCO DE DESCARGA ELÉTTRICA OU EXPLOSÃO**

- Desconectar o equipamento de toda á energia antes de instalar ou trabalhar com este equipamen to
- Verificar todas as conexões e recolocar todas as tampas antes de religar o equipamento

**O não cumprimento destas instruções pode levar á morte ou lesões sérias.**

## ⚠ WARNING / AVERTISSEMENT / WARNUNG /ADVERTENCIA / AVVERTENZA / AVISO

**RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE**

- The product's side panels may be hot, allow time for product to cool before touching.
- Follow proper mounting instructions including torque values.
- Do not allow liquids or foreign objects to enter this product.

**Failure to follow this instruction can result in serious injury, or equipment damage.**

**RISQUE DE DOMMAGE MATERIEL ET DE SURCHAUFFE DU BOITIER**

- Les panneaux latéraux du produit peuvent être chauds. Laisser le produit refroidir avant de le toucher.
- Respecter les consignes de montage, et notamment les couples de serrage.
- Ne pas laisser pénétrer de liquide ni de corps étrangers à l'intérieur du produit.

**Le non-respect de cette directive peut entraîner, des lésions corporelles graves ou des dommages matériels.**

**GEFAHR VON MATERIALSCHÄDEN UND GEHÄUSEERHITZUNG**

- Die Seitenwände können heiß sein. Lassen Sie das Produkt abkühlen, bevor Sie es berühren.
- Beachten Sie die Montageanweisungen,
- Führen Sie keine Flüssigkeiten oder Fremdkörper in das Produkt ein.

**Die Nichtbeachtung dieser Anweisung kann Körperverletzung oder Materialschäden zur Folge haben.**

**RIESGO DE DAÑOS MATERIALES Y DE SOBRECALENTAMIENTO DE LA UNIDAD**

- Los paneles laterales del producto pueden estar calientes. Esperar que el producto se enfríe antes de tocarlo.
- Respetar las instrucciones de montaje, y en particular los pares de apretado.
- No dejar que penetren líquidos o cuerpos extraños en el producto.

**Si no se respetan estas precauciones pueden producirse graves lesiones, daños materiales.**

**RISCHIO DI DANNI MATERIALI E D'INVOLUCRO CALDO**

- I pannelli laterali dell'apparecchio possono scottare; lasciar quindi raffreddare il prodotto prima di toccarlo.
- Seguire le istruzioni di montaggio corrette.
- Non far entrare liquidi o oggetti estranei in questo apparecchio.

**La mancata osservanza di questa precauzione può causare gravi rischi per l'incolumità personale o danni alle apparecchiature.**

**RISCO DE DANO MATERIAL E DE AQUECIMENTO**

- Os painéis laterais do produto podem estar quentes; dê tempo ao produto para arrefecer antes de lhe tocar.
- Siga devidamente as instruções de montagem.
- Não permita a entrada de líquidos e de objectos estranhos no produto.

**A não observância destas precauções pode provocar a morte, ferimentos graves ou danos materiais.**


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## ANNEX - ENVIROMENTAL INFORMATION

**The environmental information disclosed in this annex including the EIP Pollution logo are in compliance with People's Republic of China Electronic Industry Standard SJ/T11364 – 2006, Marking for Control of Pollution Caused by Electronic Information Products.**

| Part Name | Toxic or hazardous Substance and Elements | | | | | |
|---|---|---|---|---|---|---|
| | Lead (Pb) | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (Cr (VI)) | Polybrominated biphenyls (PBB) | Polybrominated diphenyl ethers (PBDE) |
| Semiconductor die | X | O | O | O | O | O |
| Solder | X | O | O | O | O | O |

此附件所标示的包括电子信息产品污染图标的环保信息
符合中华人民共和国电子行业标准 **SJ/T11364 - 2006,**
电子信息产品污染控制标识要求

| 部件名称 | 有毒有害物质或元素 | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr (VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 半导体芯片 | X | O | O | O | O | O |
| 焊接点 | X | O | O | O | O | O |


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ООО «НИОКР СИТЕМС»
Москва, 125362, Россия, ул. Вишневая, д. 9, к. 1, Блок 104 а и 104 в

Телефон: 8 (495) 268-14-82
Email: n@nsistems.ru

ИНН: 7735154786
ОГРН: 1167746717709