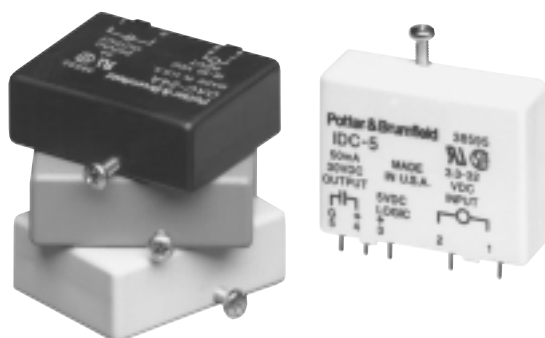




# IAC/OAC IDC/ODC

## Input/Output Modules

File E81606 & E29244

File LR38595M77

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### Features

- Industry standard package and pin-out.
- Color coded by function.
- 4,000V rms optical isolation.
- High immunity to false operation.
- Series compatible.
- Output modules can be controlled from sinking or sourcing logic.
- Compatible with 2IO series mounting boards.

### Engineering Data (all I/O modules)

**Switch Form:** 1 Form A (SPST-NO)

**Duty:** Continuous.

**Isolation:** 4,000V rms, 60 Hz.

**Capacitance:** 8 pF Typical (input to output).

**Operating Temperature:** -30°C to +85°C.

**Storage Temperature:** -40°C to +85°C.

**Potting Compound Flammability:** UL94V-0.

**Approximate Weight:** 1.38 oz. (35g).

### Ordering Information

| Typical Part Number ►                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | OAC | -5 | H |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|----|---|
| <b>1. Basic Series:</b><br>IAC = AC input module - yellow case<br>IDC = DC input module - white case<br>OAC = AC output module - black case<br>ODC = DC output module - red case                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |     |    |   |
| <b>2. Input or Logic Voltage:</b><br>5 = 5VDC<br>15 = 15VDC<br>24 = 24VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |     |    |   |
| <b>3. Options:</b><br>Blank = IAC Type — 120VAC/VDC input (90-140VAC/VDC) * *<br>IDC Type — 3.3-32VDC input * *<br>OAC Type — 3A, 24-280VAC, zero voltage turn-on output<br>ODC Type — 3A, 3-60VDC output<br>A = IAC Type — 240VAC/VDC input (180-280VAC/VDC) * *<br>OAC Type — 3A, 24-280VAC, zero voltage turn-on output<br>ODC Type — 1A, 3-250VDC output<br>IDC Type — 10-60VDC input * *<br>E = IAC Type — 18-36VAC/VDC input * *<br>F = IDC Type — 4-32VDC input & fast turn-on & turn-off times * *<br>H = OAC Type — 5A, 24-280VAC, zero voltage turn-on output<br>R = OAC Type — 5A, 12-280VAC, random voltage turn-on output |  |     |    |   |

\* \* Is not polarity sensitive.

### Our authorized distributors are more likely to maintain the following items in stock for immediate delivery.

|        |        |         |
|--------|--------|---------|
| IAC-5  | IDC-24 | OAC-24A |
| IAC-5A | OAC-5  | ODC-5   |
| IAC-5E | OAC-5A | ODC-5A  |
| IAC-15 | OAC-5H | ODC-15  |
| IAC-24 | OAC-15 | ODC-15A |
| IDC-5  | OAC-24 | ODC-24  |

# IAC

## AC Input Modules

### Input Specifications

| Parameter                          | Conditions       | Units   | IAC-5 IAC-15<br>IAC-24 |      |      | IAC-5A IAC-15A<br>IAC-24A |      |      | IAC-5E IAC-15E<br>IAC-24E |      |      |
|------------------------------------|------------------|---------|------------------------|------|------|---------------------------|------|------|---------------------------|------|------|
|                                    |                  |         | Min.                   | Typ. | Max. | Min.                      | Typ. | Max. | Min.                      | Typ. | Max. |
| Control Voltage Range $V_{IN}$     |                  | VAC/VDC | 90                     | 120  | 140  | 180                       | 240  | 280  | 18                        | 24   | 36   |
| Must Operate Voltage $V_{IN(OP)}$  |                  | VAC/VDC |                        |      | 90   |                           |      | 180  |                           |      | 18   |
| Must Release Voltage $V_{IN(REL)}$ |                  | VAC/VDC | 20                     |      |      | 20                        |      |      | 3                         |      |      |
| Max. Input Current                 | @ $V_{IN}$ =Max. | mA      |                        |      | 6    |                           |      | 6    |                           |      | 18   |
| Input Resistance                   |                  | Ohms    |                        | 28K  |      |                           | 75K  |      |                           | 2K   |      |

### Output Specifications (@ +25°C unless otherwise specified)

| Parameter                      | Conditions       | Units     | IAC-5 IAC-5A<br>IAC-5E          |      |      | IAC-15 IAC-15A<br>IAC-15E       |      |      | IAC-24 IAC-24A<br>IAC-24E       |      |      |
|--------------------------------|------------------|-----------|---------------------------------|------|------|---------------------------------|------|------|---------------------------------|------|------|
|                                |                  |           | Min.                            | Typ. | Max. | Min.                            | Typ. | Max. | Min.                            | Typ. | Max. |
| Maximum Output Voltage         |                  | VDC       |                                 |      | 30   |                                 |      | 30   |                                 |      | 30   |
| Maximum Output Current         |                  | mA        |                                 |      | 50   |                                 |      | 50   |                                 |      | 50   |
| Maximum Output Leakage Current | $V_{OUT}$ =Max.  | $\mu$ ADC |                                 |      | 10   |                                 |      | 10   |                                 |      | 10   |
| Maximum Output Voltage Drop    | $I_{SINK}$ =50mA | VDC       |                                 |      | .2   |                                 |      | .2   |                                 |      | .2   |
| Logic Supply Voltage $V_{CC}$  |                  | VDC       | 3                               | 5    | 6    | 12                              | 15   | 18   | 20                              | 24   | 30   |
| Logic Supply Current           | $V_{CC}$ =Max.   | mA        |                                 |      | 18   |                                 |      | 18   |                                 |      | 18   |
| Turn-On Time (Nominal)         | $I_{SINK}$ =25mA | ms        |                                 |      | 20   |                                 |      | 20   |                                 |      | 20   |
| Turn-Off Time (Nominal)        | $I_{SINK}$ =25mA | ms        |                                 |      | 30   |                                 |      | 30   |                                 |      | 30   |
| Output Type (Open Collector)   |                  |           | Normally Open ( $I_{SINKING}$ ) |      |      | Normally Open ( $I_{SINKING}$ ) |      |      | Normally Open ( $I_{SINKING}$ ) |      |      |

# OAC

## AC Output Modules

### Input Specifications

| Parameter                          | Conditions          | Units | OAC-5 OAC-5A<br>OAC-5H OAC-5R |      |      | OAC-15 OAC-15A<br>OAC-15H OAC-15R |      |      | OAC-24 OAC-24A<br>OAC-24H OAC-24R |      |      |
|------------------------------------|---------------------|-------|-------------------------------|------|------|-----------------------------------|------|------|-----------------------------------|------|------|
|                                    |                     |       | Min.                          | Typ. | Max. | Min.                              | Typ. | Max. | Min.                              | Typ. | Max. |
| Control Voltage Range $V_{IN}$     |                     | VDC   | 3                             | 5    | 8    | 9                                 | 15   | 18   | 18                                | 24   | 32   |
| Must Operate Voltage $V_{IN(OP)}$  |                     | VDC   |                               |      | 3    |                                   |      | 9    |                                   |      | 18   |
| Must Release Voltage $V_{IN(REL)}$ |                     | VDC   | 1                             |      |      | 1                                 |      |      | 1                                 |      |      |
| Maximum Input Current              | @ $V_{IN}$ =Nominal | mA    |                               |      | 20   |                                   |      | 16   |                                   |      | 13   |
| Input Resistance $R_{IN}$          |                     | Ohms  |                               | 220  |      |                                   | 1000 |      |                                   | 2000 |      |

PIN-3 must be positive with respect to PIN-4 for correct operation.

### Output Specifications (47 to 63 Hz., @ +25°C unless otherwise specified)

| Parameter                   | Conditions    | Units      | OAC-5 OAC-5A<br>OAC-15 OAC-15A<br>OAC-24 OAC-24A |             |      | OAC-5H IAC-15H<br>OAC-24H |             |      | OAC-5R OAC-15R<br>OAC-24R |             |      |
|-----------------------------|---------------|------------|--------------------------------------------------|-------------|------|---------------------------|-------------|------|---------------------------|-------------|------|
|                             |               |            | Min.                                             | Typ.        | Max. | Min.                      | Typ.        | Max. | Min.                      | Typ.        | Max. |
| Load Voltage $V_L$          |               | V rms      | 24                                               | 120/240     | 280  | 24                        | 120/240     | 280  | 24                        | 120/240     | 280  |
| Repetitive Blocking Voltage |               | V peak     |                                                  |             | ±600 |                           |             | ±600 |                           |             | ±600 |
| Load Current $I_L$ *        |               | A rms      | .05                                              |             | 3    | .05                       |             | 5    | .05                       |             | 5    |
| Output Current              |               | mA/°C      |                                                  | 58mA/°C     |      |                           | 66mA/°C     |      |                           | 66mA/°C     |      |
| Derating                    |               |            |                                                  | 40°C - 80°C |      |                           | 30°C - 80°C |      |                           | 30°C - 80°C |      |
| Single Cycle surge Current  |               | A peak     |                                                  |             | 100  |                           |             | 250  |                           |             | 250  |
| Leakage Current (Off-State) | $V_L$ =120VAC | mA rms     |                                                  |             | 1    |                           |             | 1    |                           |             | 1    |
| @ 60 Hz.                    | $V_L$ =240VAC | mA rms     |                                                  |             | 2    |                           |             | 2    |                           |             | 2    |
| On-State Voltage Drop       | $I_L$ =Max.   | V peak     |                                                  |             | 1.6  |                           |             | 1.6  |                           |             | 1.6  |
| Static dv/dt (Off-State)    |               | V/ $\mu$ s |                                                  |             | 200  |                           |             | 200  |                           |             | 200  |
| Turn-On Time                | @f=60 Hz.     | ms         |                                                  |             | 8.3  |                           |             | 8.3  |                           |             | .1   |
| Turn-Off Time               |               | ms         |                                                  |             | 8.3  |                           |             | 8.3  |                           |             | 8.3  |
| Output Type (Form)          |               |            | Normally Open 1A                                 |             |      | Normally Open 1A          |             |      | Normally Open 1A          |             |      |
| H/P/ Rating @ 240VAC        |               |            | 1/4HP                                            |             |      | 1/2HP                     |             |      | 1/2HP                     |             |      |

# IDC

## DC Input Modules

### Input Specifications

| Parameter                          | Conditions       | Units | IDC-5 IDC-15 IDC-24 |      |      | IDC-5A IDC-15A IDC-24A |      |      | IDC-5F IDC-15F IDC-24F |      |      |
|------------------------------------|------------------|-------|---------------------|------|------|------------------------|------|------|------------------------|------|------|
|                                    |                  |       | Min.                | Typ. | Max. | Min.                   | Typ. | Max. | Min.                   | Typ. | Max. |
| Control Voltage Range $V_{IN}$     |                  | VDC   | ±3.3                | ±24  | ±32  | ±10                    |      | ±60  | ±4                     |      | ±32  |
| Must Operate Voltage $V_{IN(OP)}$  |                  | VDC   |                     |      | ±3.3 |                        |      | ±10  |                        |      | ±4   |
| Must Release Voltage $V_{IN(REL)}$ |                  | VDC   | ±2                  |      |      | ±3                     |      |      | ±1                     |      |      |
| Maximum Input Current              | @ $V_{IN}$ =Max. | mA    |                     | 34   |      |                        | 34   |      |                        | 68   |      |
| Input Resistance                   |                  | Ohms  |                     | 1K   |      |                        | 2K   |      |                        | 500  |      |

### Output Specifications (@ +25°C unless otherwise specified)

| Parameter                      | Conditions       | Units | IDC-5 IDC-5A            |     |     | IDC-15 IDC-15A          |     |     | IDC-24 IDC-24A          |     |     | IDC-5F                  |     |     | IDC-15F                 |     |     | IDC-24F                 |     |     |
|--------------------------------|------------------|-------|-------------------------|-----|-----|-------------------------|-----|-----|-------------------------|-----|-----|-------------------------|-----|-----|-------------------------|-----|-----|-------------------------|-----|-----|
|                                |                  |       | Min                     | Typ | Max | Min                     | Typ | Max | Min                     | Typ | Max | Min                     | Typ | Max | Min                     | Typ | Max | Min                     | Typ | Max |
| Maximum Output Voltage         |                  | VDC   |                         |     | 30  |                         |     | 30  |                         |     | 30  |                         |     | 30  |                         |     | 30  |                         |     | 30  |
| Maximum Output Current         |                  | mADC  |                         |     | 50  |                         |     | 50  |                         |     | 50  |                         |     | 50  |                         |     | 50  |                         |     | 50  |
| Maximum Output Leakage Current | $V_{OUT}$ =Max.  | μADC  |                         |     | 10  |                         |     | 10  |                         |     | 10  |                         |     | 10  |                         |     | 10  |                         |     | 10  |
| Maximum Output Voltage Drop    | $I_{SINK}$ =50mA | VDC   |                         |     | .2  |                         |     | .2  |                         |     | .2  |                         |     | .2  |                         |     | .2  |                         |     | .2  |
| Logic Supply Voltage $V_{CC}$  |                  | VDC   | 3                       | 5   | 6   | 12                      | 15  | 18  | 20                      | 24  | 30  | 3                       | 5   | 6   | 12                      | 15  | 18  | 20                      | 24  | 30  |
| Logic Supply Current           | $V_{CC}$ =Max.   | mADC  |                         |     | 18  |                         |     | 18  |                         |     | 18  |                         |     | 18  |                         |     | 18  |                         |     | 18  |
| Turn-On Time (Nominal)         |                  | ms    |                         | 1*  |     |                         | 1*  |     |                         | 1*  |     |                         | .05 |     |                         | .05 |     |                         | .05 |     |
| Turn-Off Time (Nominal)        |                  | ms    |                         | 1*  |     |                         | 1*  |     |                         | 1*  |     |                         | .10 |     |                         | .10 |     |                         | .10 |     |
| Output Type (Open Collector)   |                  |       | Normally Open (SINKING) |     |     | Normally Open (SINKING) |     |     | Normally Open (SINKING) |     |     | Normally Open (SINKING) |     |     | Normally Open (SINKING) |     |     | Normally Open (SINKING) |     |     |

\* Nominal Turn-On and Turn-Off times for IDC5A, IDC15A & IDC24A are 5 ms.

# ODC

## DC Output Modules

### Input Specifications

| Parameter                          | Conditions          | Units | ODC-5 ODC-5A |      |      | ODC-15 ODC-15A |      |      | ODC-24 ODC-24A |      |      |
|------------------------------------|---------------------|-------|--------------|------|------|----------------|------|------|----------------|------|------|
|                                    |                     |       | Min.         | Typ. | Max. | Min.           | Typ. | Max. | Min.           | Typ. | Max. |
| Control Voltage Range $V_{IN}$     |                     | VDC   | 3            | 5    | 8    | 9              | 15   | 18   | 18             | 24   | 32   |
| Must Operate Voltage $V_{IN(OP)}$  |                     | VDC   |              |      | 3    |                |      | 9    |                |      | 18   |
| Must Release Voltage $V_{IN(REL)}$ |                     | VDC   | 1            |      |      | 1              |      |      | 1              |      |      |
| Maximum Input Current              | @ $V_{IN}$ =Nominal | mADC  |              |      | 18   |                |      | 16   |                |      | 13   |
| Input Resistance $R_{IN}$          |                     | Ohms  |              |      | 250  |                |      | 1000 |                |      | 2000 |

PIN-3 must be positive with respect to PIN-4 for correct operation.

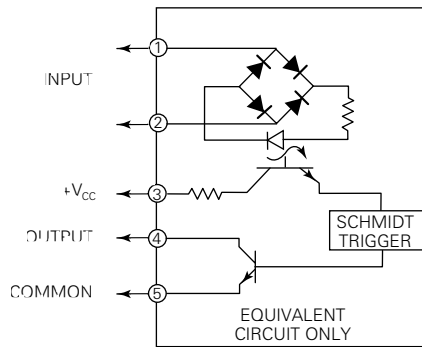
### Output Specifications (@ +25°C unless otherwise specified)

| Parameter                           | Conditions | Units | ODC-5 ODC-24 ODC-15 |      |      | ODC-5A ODC-24A ODC-15A |      |      |
|-------------------------------------|------------|-------|---------------------|------|------|------------------------|------|------|
|                                     |            |       | Min.                | Typ. | Max. | Min.                   | Typ. | Max. |
| Load Voltage $V_L$                  |            | VDC   | 3                   |      | 60   | 3                      |      | 250  |
| Load Current $I_L$                  |            | ADC   | .01                 |      | 3    | .01                    |      | 1    |
| Maximum Surge Current for 1 Second  |            | ADC   |                     |      | 5    |                        |      | 5    |
| Maximum Leakage Current (Off-State) | $V_L$ =MAX | μADC  |                     |      | 500  |                        |      | 2000 |
| Maximum On-State Voltage Drop       | $I_L$ =MAX | VDC   |                     |      | 1.5  |                        |      | 1.5  |
| Maximum Turn-On Time                |            | ms    |                     |      | .1   |                        |      | .1   |
| Maximum Turn-Off Time               |            | ms    |                     |      | .75  |                        |      | .75  |

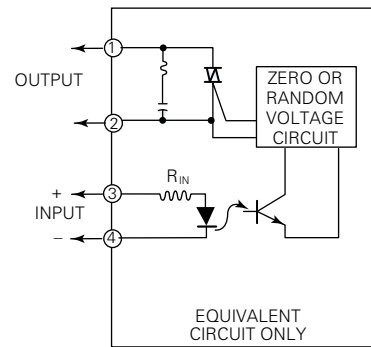
At 40°C, derate by 50mA/°C to 80°C.

PIN-1 must be positive with respect to PIN-2 for correct operation.

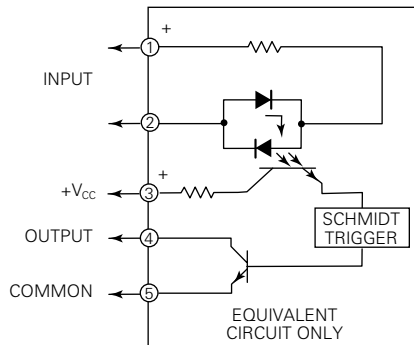
### IAC Operating Diagram



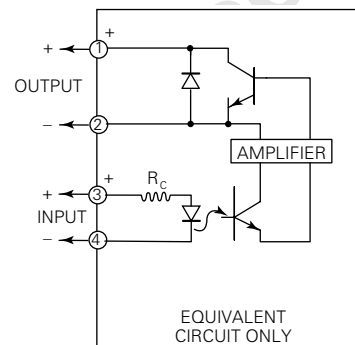
### OAC Operating Diagram



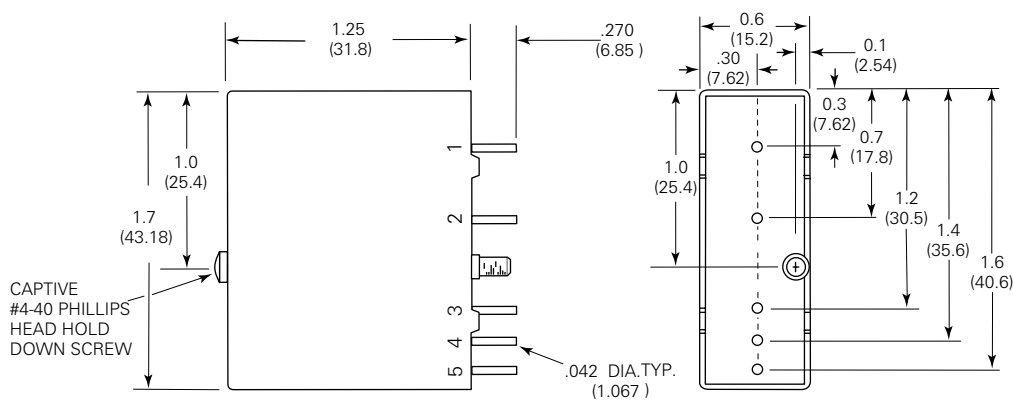
### IDC Operating Diagram



### ODC Operating Diagram



### Outline Dimensions



**Note:** Pin 5 is not present on Output Modules.