

# IACM/OACM IDCM/ODCM

## Slim Line 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

- Slim line .4" (10.16mm) thick package.
- Foot print same as .6" (15.24mm) thick package.
- 4,000V rms optical isolation.
- Color coded by function.
- High immunity to false operation.
- Series compatible.
- Output modules can be controlled from sinking or sourcing logic.
- Compatible with 2IOM series mounting boards.

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

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

**Duty:** Continuous.

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

**Operating Temperature:** -30°C to +80°C.

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

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

**Solderability:** 260°C for 5 seconds, maximum.

**Approximate Weight:** .87 oz. (22.1g).

### Ordering Information

Typical Part Number ►

OACM -5 H

#### 1. Basic Series:

IACM = Slim line AC input module — yellow case  
IDCM = Slim line DC input module — white case  
OACM = Slim line AC output module — black case  
ODCM = Slim line DC output module — red case

#### 2. Input or Logic Voltage:

5 = 5VDC  
15 = 15VDC  
24 = 24VDC  
U = OACM & ODCM Types 3-15VDC input voltage

#### 3. Options:

Blank = IACM Type — 120VAC/VDC input (90-140VAC/VDC) \* \* <None>  
IDCM Type — 3.3-32VDC input \* \*  
OACM Type — 3A, 24-280VAC, zero voltage turn-on output  
ODCM Type — 3A, 3-60VDC output  
A = IACM Type — 240VAC/VDC input (180-280VAC/VDC) \* \*  
IDCM Type — 10-60VDC input \* \*  
OACM Type — 3A, 24-280VAC  
ODCM Type — 1A, 5-250VDC output  
E = IACM Type — 18-36VAC/VDC input \* \*  
F = IDCM Type — 4-32VDC input & fast turn-on & turn-off times \* \*  
H = OACM Type — 5A, 24-280VAC, zero voltage turn-on output

\* \* Is not polarity sensitive.

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

IACM-5 OACM-5H  
IACM-5A OACM-U  
IDCM-5 OACM-UH  
OACM-5 ODCM-5

# IACM

## AC Input Modules

### Input Specifications

| Parameter                          | Conditions       | Units   | IACM-5 IACM-15<br>IACM-24 |      |      | IACM-5A IACM-15A<br>IACM-24A |      |      | IACM-5E IACM-15E<br>IACM-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 $R_{IN}$          |                  | Ohms    |                           | 28K  |      |                              | 75K  |      |                              | 2K   |      |

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

| Parameter                         | Conditions       | Units     | IACM-5 IACM-5A<br>IACM-5E  |      |      | IACM-15 IACM-15A<br>IACM-15E |      |      | IACM-24 IACM-24A<br>IACM-24E |      |      |
|-----------------------------------|------------------|-----------|----------------------------|------|------|------------------------------|------|------|------------------------------|------|------|
|                                   |                  |           | Min.                       | Typ. | Max. | Min.                         | Typ. | Max. | Min.                         | Typ. | Max. |
| Maximum Output Voltage            |                  | VDC       |                            |      | 30   |                              |      | 30   |                              |      | 30   |
| Maximum Output Current $I_{SINK}$ |                  | mADC      |                            |      | 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   |
| Maximum Logic Supply Current      | $V_{CC}$ =Max.   | mADC      |                            |      | 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<br>(Sinking) |      |      | Normally Open<br>(Sinking)   |      |      | Normally Open<br>(Sinking)   |      |      |

# OACM

## AC Output Modules

### Input Specifications

| Parameter                          | Conditions          | Units | OACM-5 OACM-5H<br>OACM-5R |      |      | OACM-15 OACM-15H<br>OACM-15R |      |      | OACM-24 OACM-24H<br>OACM-24R |      |      | OACM-U OACM-UH<br>OACM-UH |      |      |
|------------------------------------|---------------------|-------|---------------------------|------|------|------------------------------|------|------|------------------------------|------|------|---------------------------|------|------|
|                                    |                     |       | Min.                      | Typ. | Max. | Min.                         | Typ. | Max. | Min.                         | Typ. | Max. | Min.                      | Typ. | Max. |
| Control Voltage Range $V_{IN}$     |                     | VDC   | 3                         | 5    | 8    | 9                            | 15   | 18   | 18                           | 24   | 32   | 3                         | 5    | 15   |
| Must Operate Voltage $V_{IN(OP)}$  |                     | VDC   |                           |      | 3    |                              |      | 9    |                              |      | 18   |                           |      | 3    |
| Must Release Voltage $V_{IN(REL)}$ |                     | VDC   | 1                         |      |      | 1                            |      |      | 1                            |      |      | 1                         |      |      |
| Input Current                      | @ $V_{IN}$ =Nominal | mADC  |                           |      | 20   |                              |      | 16   |                              |      | 13   |                           |      | 44   |
| Input Resistance $R_{IN}$          |                     | Ohms  |                           | 220  |      |                              | 1000 |      |                              | 2000 |      |                           | 360  |      |

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      | OACM-5 OACM-15<br>OACM-24 OACM-U |         |           | OACM-5H IAC-15H<br>OAC-24H OACM-UH |         |           | OACM-5R OACM-15R<br>OACM-24R OACM-UR |         |           |
|-----------------------------|---------------|------------|----------------------------------|---------|-----------|------------------------------------|---------|-----------|--------------------------------------|---------|-----------|
|                             |               |            | 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     |                                  |         | $\pm 600$ |                                    |         | $\pm 600$ |                                      |         | $\pm 600$ |
| Load Current $I_L^*$        |               | A rms      | .05                              |         | 3         | .05                                |         | 5         | .05                                  |         | 5         |
| Output Current Derating     |               | mA/°C      |                                  | 58mA/°C |           |                                    | 66mA/°C |           |                                      | 66mA/°C |           |
| Single Cycle Surge Current  |               | A peak     |                                  |         | 100       |                                    |         | 250       |                                      |         | 250       |
| Leakage Current (Off-State) | $V_L$ =120VAC | mA rms     |                                  |         | 1         |                                    |         | 1         |                                      |         | 1         |
|                             | $V_L$ =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     |           |
| H/P/ Rating                 | @ 240VAC      | HP         |                                  | 1/4     |           |                                    | 1/2     |           |                                      | 1/2     |           |

# IDCM

## DC Input Modules

### Input Specifications

| Parameter                          | Conditions       | Units | IDCM-5 IDCM-15 IDCM-24 |      |      | IDCM-5A IDCM-15A IDCM-24A |      |      | IDCM-5F IDCM-15F IDCM-24F |      |      |
|------------------------------------|------------------|-------|------------------------|------|------|---------------------------|------|------|---------------------------|------|------|
|                                    |                  |       | Min.                   | Typ. | Max. | Min.                      | Typ. | Max. | Min.                      | Typ. | Max. |
| Control Voltage Range $V_{IN}$     |                  | VDC   | ±3.3                   | ±24  | ±32  | ±10                       |      |      | ±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 $R_{IN}$          |                  | Ohms  |                        | 1000 |      |                           | 2000 |      |                           | 500  |      |

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

| Parameter                      | Conditions       | Units | IDCM-5 IDCM-5A          |     |     | IDCM-15 IDCM-15A        |     |     | IDCM-24 IDCM-24A        |     |     | IDCM-5F                 |     |     | IDCM-15F                |     |     | IDCM-24 IDCM-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 |     | .05                     |     | .05 |
| Turn-Off Time (Nominal)        |                  | ms    |                         | 1*  |     |                         | 1*  |     |                         | 1*  |     | .10                     |     | .10 |                         | .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 IDCM5A, IDCM15A & IDCM24A are 5 ms.

# ODCM

## DC Output Modules

### Input Specifications

| Parameter                          | Conditions          | Units | ODCM-5 ODCM-5A |      |      | ODCM-15 ODCM-15A |      |      | ODCM-24 ODCM-24A |      |      | ODCM-U ODCM-UA |      |      |
|------------------------------------|---------------------|-------|----------------|------|------|------------------|------|------|------------------|------|------|----------------|------|------|
|                                    |                     |       | Min.           | Typ. | Max. | Min.             | Typ. | Max. | Min.             | Typ. | Max. | Min.           | Typ. | Max. |
| Control Voltage Range $V_{IN}$     |                     | VDC   | 3              | 5    | 8    | 9                | 15   | 18   | 18               | 24   | 32   | 3              | 5    | 15   |
| Must Operate Voltage $V_{IN(OP)}$  |                     | VDC   |                |      | 3    |                  |      | 9    |                  |      | 18   |                |      | 3    |
| Must Release Voltage $V_{IN(REL)}$ |                     | VDC   | 1              |      |      | 1                |      |      | 1                |      |      | 1              |      |      |
| Maximum Input Current              | @ $V_{IN}$ =Nominal | mADC  |                |      | 18   |                  |      | 16   |                  |      | 13   |                |      | 44   |
| Input Resistance $R_{IN}$          |                     | Ohms  |                | 250  |      |                  | 1000 |      |                  | 2000 |      |                | 360  |      |

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

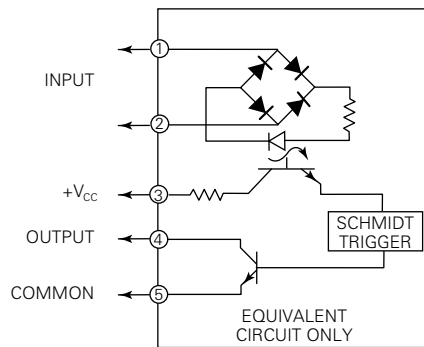
### Output Specifications (@ +25°C unless otherwise specified)

| Parameter                           | Conditions | Units | ODCM-5 ODCM-15 ODCM-24 ODCM-U |      |      | ODCM-5A ODCM-15A ODCM-24A ODCM-UA |      |      |
|-------------------------------------|------------|-------|-------------------------------|------|------|-----------------------------------|------|------|
|                                     |            |       | 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  |

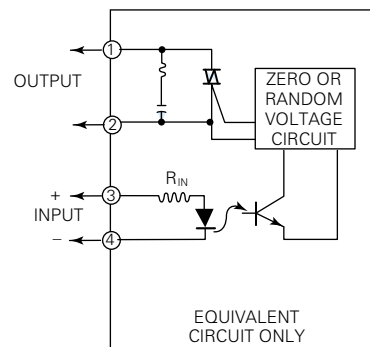
\* Above 40°C, derate by 50mA/°C to 80°C.

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

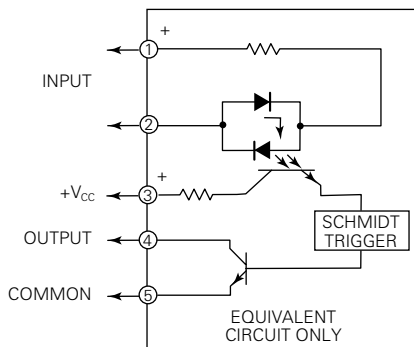
## IACM Operating Diagram



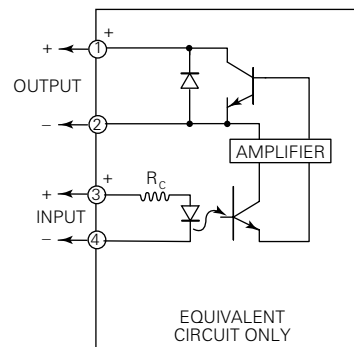
## OACM Operating Diagram



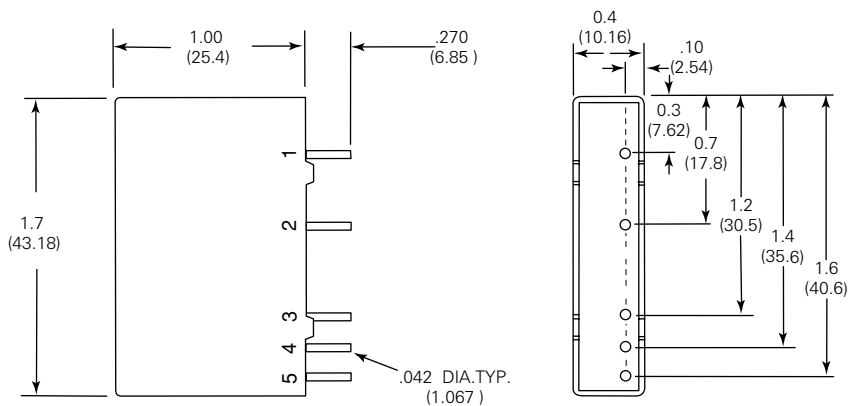
## IDCM Operating Diagram



## ODCM Operating Diagram



## Outline Dimensions



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