

# Falcon F35 & F45 Digital Panel Meters



- 1/8 DIN Indicator
- 3-1/2 or 4-1/2 digit bright red LED display
- Front panel pops off for easy decimal point setting and display scaling
- Only 3.12" (79mm) required behind panel
- Optional excitation output
- NEMA 4X enclosure optional
- Din Rail Adapter available (page C1)

## Mounting Requirements

The Falcon series 1/8 DIN indicators require a panel cutout of 1.77" (45mm) high by 3.62" (92mm) wide. To install the Falcon into a panel cutout, remove the clips from the side of the meter. Slide the meter through your panel cutout, then slide the mounting clips back on the meter. Press evenly to ensure a proper fit. Tighten screws.



## Specifications

|                                  |   |
|----------------------------------|---|
| <b>DISPLAY</b>                   |   |
| Type                             | 7-segment, red LED  |
| Height                           | 0.56" (14.2mm)  |
| Decimal Point                    | user-programmable, internally or on the terminal block most significant digit = "1"; other digits blank |
| <b>Overrange indication</b>      |   |
| Polarity                         | Automatic, with "-" indication, "+" indication implied  |
| <b>POWER REQUIREMENTS</b>        |   |
| AC Voltages                      | 120 or 220VAC, ±10% 50/60Hz   |
| DC Voltages                      | 9-32DCV, ±1%  |
| Power Consumption                | F35: 3VA, F45: 2VA  |
| <b>ISOLATION</b>                 | 250V RMS MAX  |
| <b>ACCURACY @25°C</b>            |   |
| F45 DC Process/Voltage           | ±0.02% of reading ± 1 count   |
| F35 DC Process/Voltage           | ±0.1% of reading ± 1 count  |
| F45 DC Current                   | ±0.05% of reading ±1 count<br>2A ± 5 counts 5A ± 5 counts   |
| F35 DC Current                   | ±0.1% of reading ± 1 count<br>2A ± 5 counts, 5A ± 5 counts  |
| F45 AC Voltage/Current           | ±0.5% of reading ± 35 counts  |
| F35 AC Voltage/Current           | ±1% of reading ± 5 counts (45Hz-1KHz)   |
| <b>ENVIRONMENTAL</b>             |   |
| Operating Temperature            | 0 to 55°C   |
| Storage Temperature              | -10 to 60°C   |
| Relative Humidity                | 0 to 85% non-condensing   |
| Warm-up Time                     | Less than 15 minutes  |
| <b>NOISE REJECTION</b>           |   |
| NMRR                             | F35=50dB, 50/60Hz; F45=60dB, 50/60Hz  |
| CMRR                             | (w/1KΩ unbalanced @ 60Hz) 90dB min.   |
| <b>A TO D CONVERSION</b>         |   |
| Technique                        | Dual slope integration  |
| Rate                             | F35=3 samples per second, nominal;<br>F45=2.5 samples per second, nominal                               |
| <b>MECHANICAL</b>                |   |
| Bezel                            | 3.78" x 1.89" x .51"  |
| Depth                            | 2.94"   |
| Panel Cutout                     | 3.62" X 1.77"   |
| Case Material                    | 94V-1, UL rated Noryl®  |
| Weight                           | 9.0oz (255.1g)  |
| <b>Temperature Coefficient</b>   |   |
| F35 AC/TRMS (Voltage/Current)    | (±0.1% ± 0.5 count)/°C  |
| F35 DC (Voltage/Current/Process) | (±0.01% ± 0.05 count)/°C  |
| F45 AC (Voltage/Current)         | (±0.05% ± 0.5 count)/°C   |
| F45 DC Current                   | (±0.01% ± 0.1 count)/°C   |
| F45 DC (Voltage/Process)         | (±0.05% ± 0.1 count)/°C   |

## Dimensions



more >>



# Falcon F35 & F45 Digital Panel Meters

A  
8

## Specifications for F35 Frequency Meters

### DISPLAY

Type 7-segment, red LED  
Height 0.56" (14.2mm)

**Overrange indication** Most significant digit = "1"; other digits blank

### POWER REQUIREMENTS

AC Voltages 120 or 220VAC,  $\pm 10\%$  50/60Hz  
Power Consumption 2.5VA min./4VA max.

### ACCURACY @25°C

200 Hz:  $\pm 0.2\%$  of input  $\pm 0.2$  Hz  
2 KHz:  $\pm 0.2\%$  of input  $\pm 2$ Hz

### INPUT LEVEL

500mV to 250V RMS at 1.0M $\Omega$  impedance OR 5V to 24V Square Wave (DC offset 2V maximum)

**Resolution:** 200Hz = 0.1Hz  
2kHz = 1Hz

### ENVIRONMENTAL

Operating Temperature 0 to 55°C  
Storage Temperature -10 to 60°C  
Relative Humidity 0 to 85% non-condensing @ 40°C  
Temperature Coefficient ( $\pm 0.05\%$  of input  $\pm 0.5$  count)/°C  
Warm-up Time Less than 15 minutes

### CONVERSION

Technique Frequency-to-voltage  
Rate 3 samples per second, nominal

## Specifications for F45 Temperature Meters

### DISPLAY

Type 7-segment, red LED  
Height 0.56" (14.2mm)  
Decimal Point Jumper-selectable 2-position (corresponding to resolution desired)

**Overrange indication** Most significant digit = "1"; other digits blank

**Polarity** Automatic, with "-" indication, "+" indication implied

### POWER REQUIREMENTS

AC Voltages 120 or 220 ACV,  $\pm 10\%$  50/60Hz  
DC Voltages 9-32 DCV,  $\pm 1\%$   
Power Consumption 3VA

### ENVIRONMENTAL

Operating Temperature 0 to 55°C  
Storage Temperature -10 to 60°C  
Relative Humidity 0 to 85% non-condensing  
Warm-up Time Less than 20 minutes

### INPUTS

Thermocouple J, K, E, T, R, and S  
RTD Platinum 100 (.00385 alpha), 2, 3 or 4 wire  
Millivolt  $\pm 84$ mV reading of uncompensated mV  
Input Impedance 7M $\Omega$ (typical)  
Conversion Rate 2-1/2 times per second  
Open Thermocouple Detection -1 on display, -40nA bias on thermocouple

| Temperature |                        |  |                                 |
|-------------|------------------------|--|---------------------------------|
| Sensor Type | Temperature Range      | Accuracy   | Resolution                      |
| E           | -200 to 1000°C         | $\pm 0.1\%$ of rdg $\pm 1^\circ\text{C}$<br>$\pm 0.1\%$ of rdg $\pm 1.8^\circ\text{F}$ | 0.1 or 1 Degree User Selectable |
|             | -328 to 1832°F         |  |                                 |
| J           | -200 to 1200°C         |  |                                 |
|             | -328 to 2192°F         |  |                                 |
| K           | -200 to 1372°C         |  |                                 |
|             | -328 to 2501°F         |  |                                 |
| T           | -200 to 400°C          |  |                                 |
|             | -328 to 752°F          |  |                                 |
| RTD Pt 100  | -200 to 850°C          |  |                                 |
|             | -328 to 1562°F         |  |                                 |
| R, S        | -50 to 1768°C          | 1 Degree Automatic   |                                 |
|             | -58 to 3214°F          |  |                                 |
| mV          | Voltage Range          | $\pm 0.02\%$ of rdg<br>$\pm 1$ count   | 0.01 mV                         |
|             | $\pm 84.00$ mV         |  |                                 |
| mV          | Voltage Range          | $\pm 0.02\%$ of rdg<br>$\pm 1$ count   | 0.001mV                         |
|             | -19.999mV to +84.000mV |  |                                 |

## Inputs

| DC Voltage |            |                 |            |                 |                     |
|------------|------------|-----------------|------------|-----------------|---------------------|
| Range      | F35        |                 | F45        |                 | Max Input (Unfused) |
|            | Resolution | Input Impedance | Resolution | Input Impedance |                     |
| 200mV      | 100uV      | >100MEG         | 10uV       | >100MEG         | 100V                |
| 2V         | 1mV        | >10MEG          | 100uV      | >10MEG          | 250V                |
| 20V        | 10mV       | >10MEG          | 1mV        | >9.9MEG         | 250V                |
| 200V       | 100mV      | >9.9MEG         | 10mV       | >9.8MEG         | 250V                |

| AC TRMS Voltage |            |                 |            |                 |                     |
|-----------------|------------|-----------------|------------|-----------------|---------------------|
| Range           | F35        |                 | F45        |                 | Max Input (Unfused) |
|                 | Resolution | Input Impedance | Resolution | Input Impedance |                     |
| 200mV           | 100uV      | >100MEG         | 10uV       | >100MEG         | 100V                |
| 2V              | 1mV        | >1MEG           | 100uV      | >1MEG           | 250V                |
| 20V             | 10mV       | >10MEG          | 1mV        | >1MEG           | 250V                |
| 200V            | 100mV      | >9.9MEG         | 10mV       | >1MEG           | 250V                |

| DC / AC TRMS Current |            |       |              |                     |
|----------------------|------------|-------|--------------|---------------------|
| Range                | Resolution |       | Voltage Drop | Max Input (Unfused) |
|                      | F35        | F45   |              |                     |
| 200uA                | 100nA      | 10nA  | 200mV        | 10mA                |
| 2mA                  | 1uA        | 100nA |              | 40mA                |
| 20mA                 | 10uA       | 1uA   |              | 100mA               |
| 200mA                | 100uA      | 10uA  |              | 500mA               |
| 2A                   | 1mA        | 100uA |              | 2.2A                |
| 5A                   | 10mA       | 1mA   |              | 5.2A                |

| DC Process |            |                 |            |                 |                     |
|------------|------------|-----------------|------------|-----------------|---------------------|
| Range      | F35        |                 | F45        |                 | Max Input (Unfused) |
|            | Resolution | Input Impedance | Resolution | Input Impedance |                     |
| 4 to 20mA  | 10uA       | NA              | 1uA        | NA              | 200mV               |
| 1 to 5Vdc  | 10mV       | >10MEG          | 1mV        | >9.9MEG         | NA                  |
| 0 to 10Vdc | 10mV       | >10MEG          | 1mV        | >9.9MEG         | NA                  |

# Falcon F35 & F45 Digital Panel Meters



## Ordering Information

Falcon Indicators can be configured by making an entry in each section. Example: F35-1-52-0.



| Selection             | Description     | Selection   | Description                |
|-----------------------|-----------------|---|----------------------------|
| <b>Basic Unit</b>     |                 | <b>Function/Range cont'd</b>                              |                            |
| F35                   | 3 1/2 digit LED | 61  | 200 AC $\mu$ A TRMS •      |
| F45                   | 4 1/2 digit LED | 62  | 2 ACmA TRMS •              |
| <b>Power Supply</b>   |                 | 63  | 20 ACmA TRMS •             |
| 1                     | 120 ACV         | 64  | 200 ACmA TRMS •            |
| 2                     | 220 ACV         | 65  | 2 ACA TRMS •               |
| 3                     | 9-32 DCV†       | 66  | 5 ACA TRMS •               |
| <b>Function/Range</b> |                 | 71  | 4-20 DCmA Process          |
| 11                    | 200 DCmV        | 72  | 1-5 DCV Process            |
| 12                    | 2 DCV           | 73  | 0-10 DCV Process           |
| 13                    | 20 DCV          | 80 (F45)  | J T/C                      |
| 14                    | 200 DCV         | 81 (F45)  | K T/C                      |
| 21                    | 200 D $\mu$ A   | 82 (F45)  | S T/C                      |
| 22                    | 2 DCmA          | 83 (F45)  | T T/C                      |
| 23                    | 20 DCmA         | 84 (F45)  | E T/C                      |
| 24                    | 200 DCmA        | 85 (F45)  | R T/C                      |
| 25                    | 2 DCA           | 86 (F45)  | DCmV                       |
| 26                    | 5 DCA           | 90 (F45)  | RTD Pt100 Ohm              |
| 31                    | 200 ACmV        | 91 (F35)  | 20-199.9 Hz RMS            |
| 32                    | 2 ACV           | 92 (F35)  | 20-1999 Hz RMS             |
| 33                    | 20 ACV          | 93 (F35)  | 20-199.9 Hz Sq. Wave       |
| 34                    | 200 ACV         | 94 (F35)  | 20-1999 Hz Sq. Wave        |
| 41                    | 200 A $\mu$ A   | <b>Excitation Output</b>                                  |                            |
| 42                    | 2 ACmA          | (not available with AC, temperature, or frequency inputs) |                            |
| 43                    | 20 ACmA         | 0   | None                       |
| 44                    | 200 AC mA       | 1   | 12 DCV @ 25mA max. current |
| 45                    | 2 ACA           | 2   | 24 DCV @ 25mA max. current |
| 46                    | 5 ACA           | <b>Display Scaling</b>                                    |                            |
| 51                    | 200 ACmV TRMS • | (Temperature units only)                                  |                            |
| 52                    | 2 ACV TRMS •    | C   | °C                         |
| 53                    | 20 ACV TRMS •   | F   | °F                         |
| 54                    | 200 ACV TRMS •  |   |                            |

† Not available for use with frequency meters

• Only available with F35

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