



## Falcon F35 Series Digital Panel Meter

- Full 3-1/2 Digit, Bright Red 0.56" (14.2mm) Display
- Broad Range Display Scaling
- Short 2.94" (74.7mm) Deep, 1/8 DIN Case
- Screw Terminal Connector for Easy Installation
- Four User-Settable Ranges: 200mV, 2V, 20V, 200V
- Jumper-Selectable Decimal Point
- Average Responding and optional TRMS Measurement Ranges
- Optional Isolated 9-32VDC Power Supply



The Falcon Series digital indicators are premium quality 1/8 DIN meters for industrial applications. All Falcon units feature jumper-selectable decimal point (internal and on the connector for remote decimal point) and display scaling, providing wide application flexibility. In addition, signal input ranges are easy to change with jumpers on the main board. The Falcon has a 0.56" bright red LED display for high visibility.

Compactly designed for applications requiring minimal rear panel depth, the Falcon fits a standard 1/8 DIN panel cut-out (91.9mm x 45mm) and requires less than 3" behind the panel. A screw terminal connector is a standard feature for easy wiring of the power supply and signal input connections.

### Installation and Panel Cutout

**Mounting Requirements**  
The Falcon series 1/8 DIN indicators require a panel cutout of 1.77" (45mm) high by 3.62" (91.9mm) 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.

**Engineering Label Placement**  
If replacement of the engineering unit label is required, place the tip of a ball-point pen into the small hole at the base of the engineering label in the bezel. Slide the label up until it pops out. Grasp and remove. Slide the new label half the distance in, then use the ball-point pen to slide it down into place.

# Specifications

## DISPLAY

**Type:** 7-segment, red LED  
**Height:** 0.56" (14.2mm)  
**Decimal Point:** 3-position programmable, internally or on the terminal block  
**Overrange indication:** most significant digit = "1"; other digits blank  
**Polarity:** Automatic, with "-" indication, "+" indication implied

## POWER REQUIREMENTS

**AC Voltages:** 120 or 220VAC, ±10%  
 50/60Hz  
**DC Voltages:** 9-32VDC, ±1%  
**Power Consumption:** 3VA

## ACCURACY @25° C

±1.0% of reading ±5 counts (45Hz - 1kHz)

## ENVIRONMENTAL

**Operating Temperature:** 0 to 55°C  
**Storage Temperature:** -10 to 60°C  
**Relative Humidity:** 0 to 85% non-condensing  
**Temperature Coefficient:** (±0.1% of input ± 0.5 count)/°C

**Warm-up Time:** Less than 15 minutes  
**Response Time:** Less than 3 seconds

## NOISE REJECTION

**NMRR:** 50dB, 50/60Hz  
**CMRR:** (w/1KΩ unbalanced @ 60Hz): 90dB min.

## ANALOG TO DIGITAL CONVERSION

**Technique:** Dual slope integration  
**Rate:** 3 samples per second, nominal

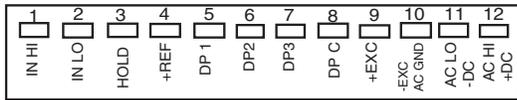
## MECHANICAL

**Bezel:** 3.78" x 1.89" x .51"  
 (96 x 48 x 13mm)  
**Depth:** 2.94"(74.7mm)  
**Panel Cutout:** 3.62" X 1.77"  
 (91.9 x 45mm 1/8 DIN)  
**Case Material:** 94V-1, UL rated Noryl®  
**Weight:** 9.0oz (255.1g)

## INPUTS: AC/AC TRMS Voltage

Input Range	Display Resolution	Input Impedance	Maximum Overload
200mV	100μV	>100MΩ	100V
2V	1mV	>1MΩ	250V
20V	10mV	>10MΩ	250V
200V	100mV	>9.9MΩ	250V

# Wiring Diagram



**Input Signal:** Connect the signal to be monitored to the IN HI and IN LO terminals. IN HI is terminal #1, IN LO is terminal #2.

**Supply Power:** Connect the supply power to terminals #11 and #12. Note that if AC power is supplied, terminal #11 is for Neutral, and terminal #12 is for Hot. If DC power is used, terminal #11 is for -DC, and #12 is for +DC.

**Display Hold:** This feature allows you to hold the displayed value indefinitely. A remote switch can be used to make the connection. To activate the display hold, short pins #3 and #4 (Hold +REF). This connection must be kept isolated from other circuitry. To hold multiple units, separate poles of the switch must be used to maintain the isolation.



These instruments are designed for maximum safety to the operator when mounted in a panel according to instructions. They are not to be used unmounted or for exploratory measurements in unknown circuits.

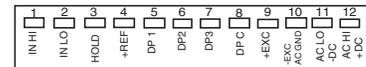


Before switching the instrument on, make sure the supply voltage matches the power source required of the instrument as indicated on the hook-up label affixed to the instrument.

# Decimal Point Selection

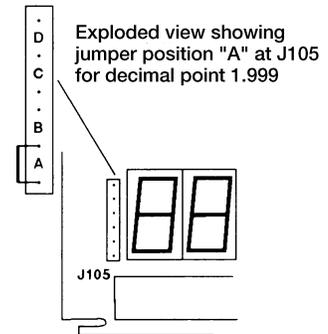
**From terminal block:** The decimal point can be set from the rear screw terminal block by connecting the appropriate decimal point (DP 1, 2, 3, ) to the DP C terminal. The J105 jumper must be in the D position (see diagram under "From front panel").

Decimal Point	Connect
1.999	DP C to DP1
19.99	DP C to DP2
199.9	DP C to DP3
1999	No Decimal



**From front panel:** The decimal point can also be selected by removing the front bezel from the meter. Move the push-on jumper J105 across the correct letter.

Decimal Point	Jumper Position at J105
1.999	A
19.99	B
199.9	C
1999	D*



# Voltage Range Selection

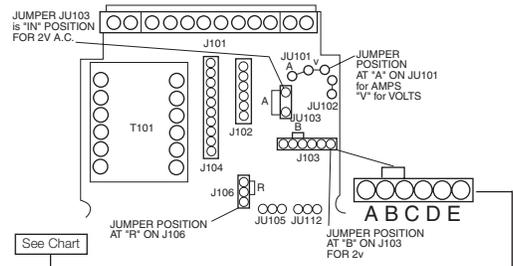
All Falcon Indicators are configured initially per the customer specifications. Range changes can be accomplished as follows:

Disconnect power from the unit. Remove the unit from the panel. Remove the front bezel by inserting slotted screwdriver in the vertical slots on either side of the bezel and then turning to pry the bezel off. Unscrew the two Phillips head screws at either side of the circuit board. Finally, push on the green connector assembly in the back of the unit to slide the main circuit board out from the meter. Change jumpers according to the chart below.

Note: If a new range is selected, the calibration procedure must also be performed.

Input Range	JU102	J103	J106	JU101	JU103
200mV	IN	C	R	V	OUT
2V	OUT	B	R	V	IN
20V	OUT	B	R	V	OUT
200V	OUT	D	R	V	OUT

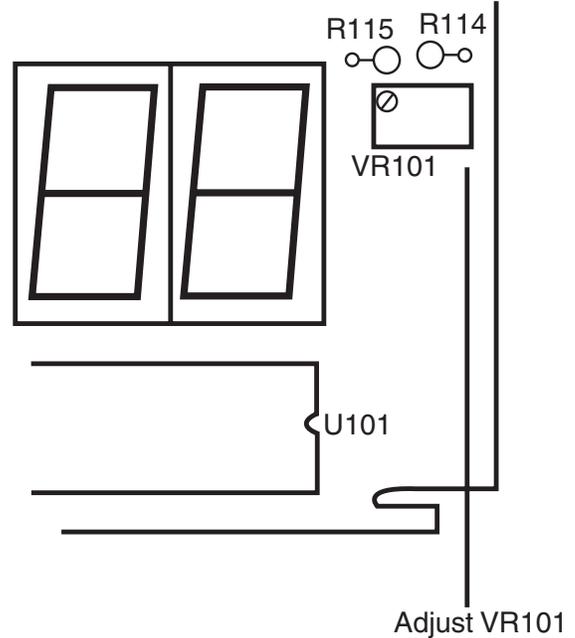
Note: JU101 and JU102 are hard wire jumpers, and are removed by cutting them. Resoldering the JU jumpers is not recommended. If this is required, or if a function is to be changed (from volts to current), Simpson recommends returning the Falcon to the factory or an Authorized Service Center. After moving the jumpers to the desired location, put the Falcon back together and install in your panel, or proceed to calibration.



## Display Scaling

The Falcon can be easily scaled for a broad range of engineering units. The meter may be scaled up to two times, or down to 1/5 the value of the input.

- 1) Remove the front bezel with a small screwdriver.
- 2) Apply the full scale input to the meter.
- 3) Adjust the potentiometer VR101 located on the right side the display board to the desired scaled value.
- 4) Replace the bezel carefully. A card of labels is provided for alternative engineering units, such as percent.



## Calibration



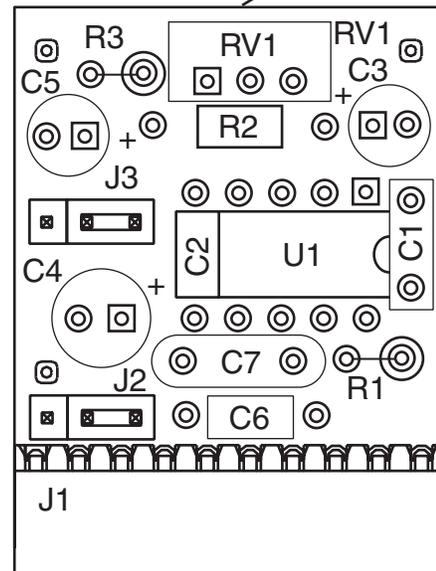
The following procedure requires opening the unit and removing the top cover with the power ON. Use an insulated screwdriver and extreme caution when making these adjustments. It is advisable to have an Authorized Service Center perform this operation, or return the Falcon to the factory.

The Falcon is calibrated at the factory per order. If you changed the range and have moved the jumpers, your Falcon will need to be recalibrated.

- 1) Remove the bezel with a small screwdriver.
- 2) Short input terminals #1 and #2 (IN HI and IN LO) and adjust potentiometer RV1 on AC Input card until display reads  $0 \pm 1$  count.
- 3) Apply an input signal to terminals #1 and #2, and adjust potentiometer VR101 until the display indicates the value of the signal. See diagram in Display Scaling.
- 4) Reassemble the meter and install it in your panel.

Located on the AC Input card

POTENTIOMETER

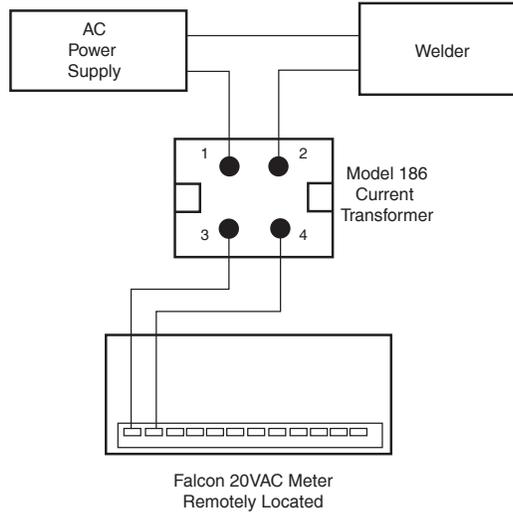


## Application Example

A plant supervisor needs to monitor a welding process from a remote mezzanine. This process runs off of an AC power supply, and draws 45AC amps.

A Falcon 20VAC meter, coupled with a 50 amp/10 volt current transformer, can monitor the current draw of the welding process. The transformer allows the signal to be sent to a remote location without any appreciable signal loss.

The Falcon meter needs to be scaled before it is connected to the transformer. Remove the front bezel with a small screwdriver. Apply a 10VAC signal to the Falcon meter. Adjust potentiometer VR101 (to the right of the display) until the meter indicates 50.0 (amps), which is the full scale output of the current transformer. Once this is done, remove the signal input and put the bezel back on the Falcon.



The current transformer is installed in series between the power supply and the welding process. The Falcon AC volt meter is connected to the transformer.

The Falcon can be installed in the mezzanine, remotely located from the transformer (and the process).

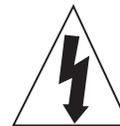
## Ordering Information

F35 Basic Unit	Power Supply	Range	Excitation
F35			
3-1/2 Digit Indicator			
1	120VAC	AC	AC TRMS
2	220VAC	31 200mV	51 0 None
3	9-32VDC	32 2V	52
		33 20V	53
		34 200V	54

## Safety Symbols

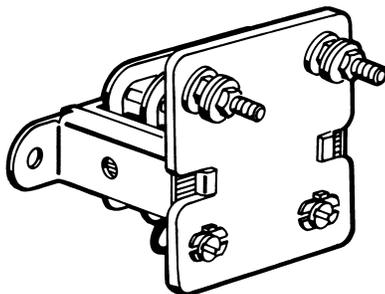


The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury.



The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly adhered to, could result in damage to or destruction of part or all the instrument.

## Accessories



Model 186 Current Transformers easily convert a current signal (up to 50 amps) into a 0-10 AC volt signal and transmit the signal over a long distance. This allows remote monitoring of a process or application.

These units can be coupled with a Donut Current Transformer if a high current rating (up to 1999 amps) is to be monitored at a remote location.

## Ordering Information

Range	VA	Cat.Number
0-5 amp	0.75	01312
0-10 amp	1.45	01314
0-15 amp	1.05	01315
0-20 amp	1.04	01316
0-25amp	1.50	01317
0-30 amp	1.10	01318
0-40 amp	1.09	01319
0-50 amp	1.90	01321
0-100mA	0.50	01295
0-500mA	0.53	01304