# *Hawk 3 Digital Panel Meter / Controller*

**File # E199939**

- **All parameters set from easy to understand front panel access**
- **One, two or four 5-amp relays optional**
- **Five user-selectable brightness levels**
- **1/8 DIN, shallow depth case, 3.24”**
- **RS485 digital communications optional (H345)**
- **12 or 24 DCV Excitation output optional, maximum 30mA @ 12V and 20mA @ 24V**
- **4-20mA or 0-10 DCV analog retransmission optional**
- **NEMA 4X rated front panel**



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# Hawk 3 Digital Panel Meter / Controller

## Specifications

| DISPLAY | |
|---|---|
| Type | 7- segment, red LED, 4 or 5 digits |
| Height | 0.56" (14.2mm) |
| Brightness | 5 settings, user programmable |
| Decimal Point | 4 or 5 position, user programmable |
| Overrange Indication | Display flashes "EEEE" indicating Maximum Value Exceeded (Example: H335) |
| Underrange Indication | Display flashes "-EEE" indicating Minimum Value Exceeded (Example: H335) |
| Alarm Indicators | 4 LED indicators for up to four independent setpoints |
| Linearization | H335 2 points<br>H345 16 points |

| POWER REQUIREMENTS | |
|---|---|
| AC | 85 to 250 VAC or 120VAC @ 10VA |
| DC | 9 to 36 DCV @ 10VA |
| Isolation | 250V RMS MAX |

Note: Each supply is shown at the maximum and minimum values except the 120 VAC unit, which is allowed ± 10%

| ACCURACY @ 25°C as % of rdg | | |
|---|---|---|
| | 4-1/2 digit | 3-1/2 digit |
| **DC Current** | | |
| High (5A, 2A) | ± 0.2% of reading<br>± 1 count | ± 0.3% of reading<br>± 1 count |
| All others | ± 0.05% of reading<br>± 1 count | ± 0.1% of reading<br>± 1 count |
| **DC Volts** | | |
| High (600V) | ± 0.1% of reading<br>± 1 count | ± 0.2% of reading<br>± 1 count |
| All others | ± 0.05% of reading<br>± 1 count | ± 0.1% of reading<br>± 1 count |
| **Resistance** | | |
| All ranges | ± 0.1% of reading<br>± 2 counts | ± 0.1% of reading<br>± 2 counts |
| * AC Current | | |
| High (2A, 5A) | ± 0.2% of reading<br>± 2 counts | ± 0.3% of reading<br>± 2 counts |
| All others | ± 0.1% of reading<br>± 2 counts | ± 0.2% of reading<br>± 2 counts |
| * AC Volts | | |
| High (600V) | ± 0.1% of reading<br>± 1 count | ± 0.2% of reading<br>± 1 count |
| All others | ± 0.05% of reading<br>± 1 count | ± 0.1% of reading<br>± 1 count |
| * AC functions measured at 50 hz, include ± 1 count for each additional 100 Hz above 50 Hz | | |

## Specifications - Con't

| ENVIRONMENTAL | |
|---|---|
| Operating Temperature | 0 to 50ºC |
| Storage Temperature | -10 to +60°C |
| Relative Humidity | < 80% for the temp. up to 31ºC and decreasing linearly to 50% relative humidity at 50°C |
| Ambient Temp | 25°C |
| Temperature Drift | ± 100 ppm /°C |
| Warmup time | 10 minutes |

| NOISE REJECTION | |
|---|---|
| NMRR | 60 dB @ 50-60 Hz |
| CMRR | 70 db @ 50-60 Hz |
| For indoor use to an altitude up to 200m | |

| A TO D CONVERSION | |
|---|---|
| Technique | Successive approximation with oversampling |
| Sample Rate | 10 conversions per second |
| Display Rate | User Programmable from 1 - 420 updates / minute (240 default) |

**RS-485 Specications (only available on H345)**

2 wire / Half duplex, Baud rate: 9600 baud, 1ms delay per character, 32 Nodes Maximum on Bus.
Optically and magnetically isolated for ground loop elimination

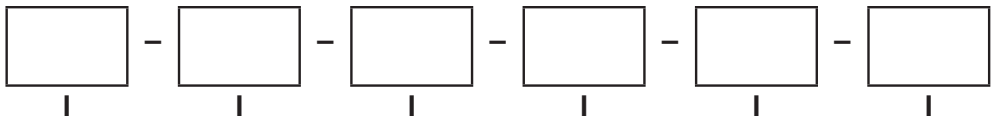
| MECHANICAL | |
|---|---|
| Bezel | 3.92" x 2.0" x 0.52" (99.8mm x 51.9mm x 132mm) |
| Depth | 3.24" (82.3mm) behind panel |
| Panel cutout | 3.62" x 1.77" (92mm x 45mm) 1/8 DIN |
| Weight | 10 oz. (283.5 g) |
| Cover | NEMA 4X Rated front panel |

| ELECTRICAL | |
|---|---|
| Accuracy | Listed as % of reading at 25°C.<br>Add 100ppm/°C to compensate for drift.<br>Tested at 50Hz, include +/-1 count for every 100Hz above 50 Hz |
| Transient Overvoltage | Installation Category III, Pollution Degree 2 |
| Analog Output | Sampling Rate = 100 mSec.<br>Reaction Time 0 to Full Scale = 10 µSec |

# *Hawk 3 Digital Panel Meter / Controller*

## Ordering Information -

**Hawk 3 Indicators can be configured by making an entry into each section. Example: H335-3-71-0-4-1**




**Select From Each One Below**

| Basic Unit | | |
|---|---|---|
| | H335 | 3-1/2 digit, Red LED |
| | H345 | 4-1/2 digit, Red LED |
| | | |
| **Power Supply** | | |
| | 1 | 120 ACV (3-1/2 only) |
| | 2 | 85-250 ACV (4-1/2 only) |
| | 3 | 9-36 DCV |
| | 4 | 85-250 ACV (3-1/2 only) |
| | | |
| **Function/Range** | | |
| | 11 | 200 DCmv |
| | 12 | 2 DCV |
| | 13 | 20 DCV |
| | 14 | 200 DCV |
| | 15 | 600 DCV * |
| | | |
| | 21 | 200 DCµA |
| | 22 | 2 DCmA |
| | 23 | 20 DCmA |
| | 24 | 200 DCmA |
| | 25 | 2 DCA |
| | 26 | 5 DCA |
| | | |
| | 31 | 200 ACmV |
| | 32 | 2 ACV |
| | 33 | 20 ACV |
| | 34 | 200 ACV |
| | 35 | 600 ACV |

| Function/Range | | |
|---|---|---|
| | 41 | 200 ACµA |
| | 42 | 2 ACmA |
| | 43 | 20 ACmA |
| | 44 | 200 ACmA |
| | 45 | 2 ACA |
| | 46 | 5 ACA |
| | | |
| | 51 | 200 ACmV TRMS |
| | 52 | 2 ACV TRMS |
| | 53 | 20 ACV TRMS |
| | 54 | 200 ACV TRMS |
| | 55 | 600 ACV* TRMS |
| | | |
| | 61 | 200 ACµA TRMS |
| | 62 | 2 ACmA TRMS |
| | 63 | 20 ACmA TRMS |
| | 64 | 200 ACmA TRMS |
| | 65 | 2 ACA TRMS |
| | 66 | 5 ACA TRMS |
| | | |
| | 71 | 4-20 DCmA Process |
| | 72 | 0-10 DCV Process |
| | | |
| | 81 | 200 Ohm |
| | 82 | 2K Ohm |
| | 83 | 20K Ohm |
| | 84 | 200K Ohm |
| | | |

| Output Signal | | |
|---|---|---|
| | 0 | None |
| | 1 | 4-20 DCmA |
| | 2 | 0-10 DCV |
| | 6 | RS-485 (4-1/2 only) |
| | | |
| **5A Relays** | | |
| | 0 | None |
| | 1 | One |
| | 2 | Two |
| | 4 | Four |
| | | |
| **Excitation** | | |
| | 0 | None |
| | 1 | 12 DCV |
| | 2 | 24 DCV |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

* Awaiting UL approval



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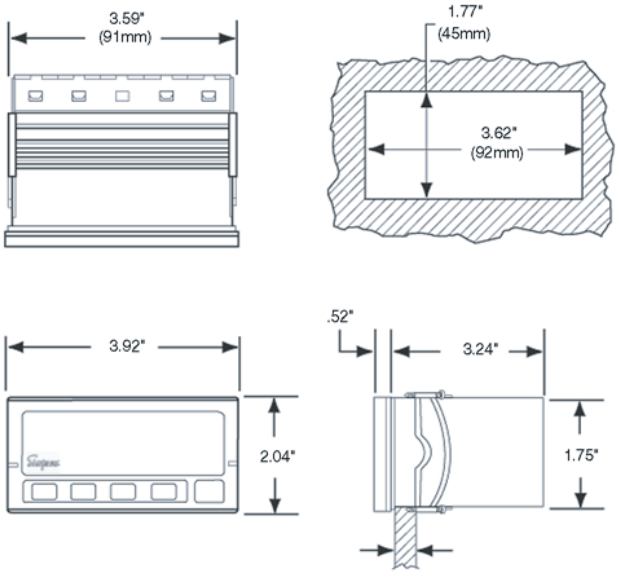
## Installation and Panel Cutout - H335, H340, H345



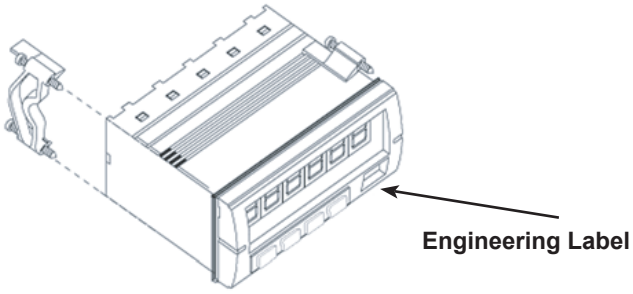

**Mounting Requirements**
The Hawk 3 Advanced Digital Controller 1/8 DIN meters require a panel cutout of 1.77” (45mm) high by 3.62” (92mm) wide.

To install the Hawk 3 meter into a panel cutout, remove the clips from the side of the meter.

Slide the meter through the panel cutout, then slide the mounting clips back on the meter. Press evenly to ensure a proper fit. Tighten screws.

**Engineering Label Placement**
To replace the engineering unit label, place the tip of a ballpoint 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 ballpoint pen to slide it down into place.



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## Inputs

| DC Voltage | | | | |
|---|---|---|---|---|
| Range | Resolution 4-1/2 | Resolution 3-1/2 | Input Impedance | Overload |
| 200 mV | 10 µV | .1 mV | 1M Ω | 5 DCV |
| 2 V | .1 mV | 1 mV | 1M Ω | 5 DCV |
| 20 V | 1 mV | 10 mV | 1M Ω | 300 DCV |
| 200 V | 10 mV | .1 V | 1M Ω | 300 DCV |
| 600 V | .1 V | 1 V | 1M Ω | 1K DCV |

| AC Voltage (same for TRMS @ 60 Hz) | | | | |
|---|---|---|---|---|
| Range | Resolution 4-1/2 | Resolution 3-1/2 | Input Impedance | Overload |
| 200 mV | 10 µV | .1 mV | 200K Ω | 5 DCV |
| 2 V | .1 mV | 1 mV | 200K Ω | 5 DCV |
| 20 V | 1 mV | 10 mV | 1M Ω | 300 DCV |
| 200 V | 10 mV | .1 V | 1M Ω | 300 DCV |
| 600 V | .1 V | 1 V | 1M Ω | 1K DCV |

| DC Current | | | | |
|---|---|---|---|---|
| Range | Resolution 4-1/2 | Resolution 3-1/2 | Input Impedance | Overload |
| 200 µA | 10 nA | .1 µA | 1K Ω | 4.5 mA DC |
| 2 mA | .1 µA | 1 µA | 100 Ω | 45 mA DC |
| 20 mA | 1 µA | 10 µA | 10 Ω | 200 mA DC |
| 200 mA | 10 µA | .1 mA | 1 Ω | 600 mA DC |
| 2 A | .1 mA | 1 mA | .013 Ω | 5.5 A DC |
| 5 A | 1 mA | 10 mA | .013 Ω | 5.5 A DC |

| AC Current (same for TRMS @ 60 Hz) | | | | |
|---|---|---|---|---|
| Range | Resolution 4-1/2 | Resolution 3-1/2 | Input Impedance | Overload |
| 200 µA | 10 nA | .1 µA | 1K Ω | 4.5 mA DC |
| 2 mA | .1 µA | 1 µA | 100 Ω | 45 mA DC |
| 20 mA | 1 µA | 10 µA | 10 Ω | 200 mA DC |
| 200 mA | 10 µA | .1 mA | 1 Ω | 600 mA DC |
| 2 A | .1 mA | 1 mA | .013 Ω | 5.5 A DC |
| 5 A | 1 mA | 10 mA | .013 Ω | 5.5 A DC |

| Resistance | | | | |
|---|---|---|---|---|
| Range | Resolution 4-1/2 | Resolution 3-1/2 | Input Impedance | Overload |
| 200 Ω | 10 m Ω | .1 Ω | 1.2K Ω | ± 5 DCV |
| 2K Ω | .1 Ω | 1 Ω | 12K Ω | ± 5 DCV |
| 20K Ω | 1 Ω | 10 Ω | 121K Ω | ± 5 DCV |
| 200K Ω | 10 Ω | 100 Ω | 1.2M Ω | ± 5 DCV |