

Hawk 3 Digital Panel Meter / Controller



- 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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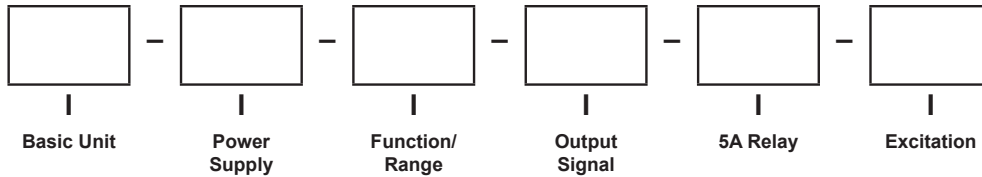
Specifications		
DISPLAY		
Type	7- segment, red LED, 4 or 5 digits	
Height	0.56" (14.2mm)	
Brightness	5 settings, user programmable	
Decimal Point	4 or 5 position, user programmable	
Overrange Indication	Display flashes "EEEE" indicating Maximum Value Exceeded (Example: H335)	
Underrange Indication	Display flashes "-EEE" indicating Minimum Value Exceeded (Example: H335)	
Alarm Indicators	4 LED indicators for up to four independent setpoints	
Linearization	H335 2 points 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 $\pm 10\%$		
ACCURACY @ 25°C as % of rdg		
	4-1/2 digit	3-1/2 digit
DC Current		
High (5A, 2A)	$\pm 0.2\%$ of reading ± 1 count	$\pm 0.3\%$ of reading ± 1 count
All others	$\pm 0.05\%$ of reading ± 1 count	$\pm 0.1\%$ of reading ± 1 count
DC Volts		
High (600V)	$\pm 0.1\%$ of reading ± 1 count	$\pm 0.2\%$ of reading ± 1 count
All others	$\pm 0.05\%$ of reading ± 1 count	$\pm 0.1\%$ of reading ± 1 count
Resistance		
All ranges	$\pm 0.1\%$ of reading ± 2 counts	$\pm 0.1\%$ of reading ± 2 counts
* AC Current		
High (2A, 5A)	$\pm 0.2\%$ of reading ± 2 counts	$\pm 0.3\%$ of reading ± 2 counts
All others	$\pm 0.1\%$ of reading ± 2 counts	$\pm 0.2\%$ of reading ± 2 counts
* AC Volts		
High (600V)	$\pm 0.1\%$ of reading ± 1 count	$\pm 0.2\%$ of reading ± 1 count
All others	$\pm 0.05\%$ of reading ± 1 count	$\pm 0.1\%$ of reading ± 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 50°C
Storage Temperature	-10 to +60°C
Relative Humidity	< 80% for the temp. up to 31°C 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. Add 100ppm/°C to compensate for drift. 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. Reaction Time 0 to Full Scale = 10 μ Sec

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Ordering Information -

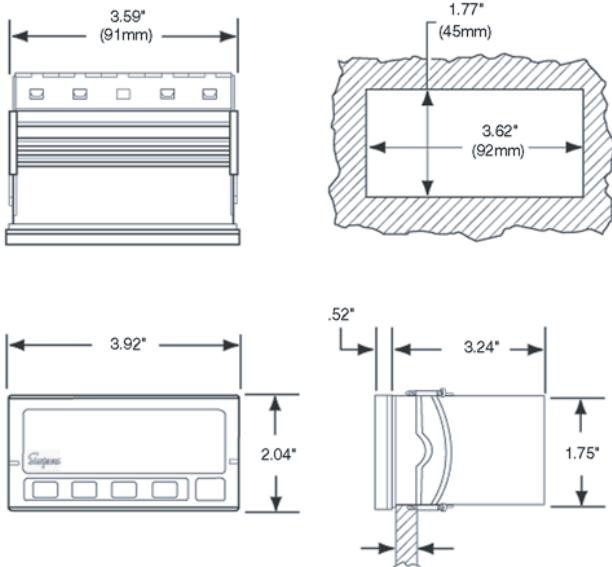
Hawk 3 Indicators can be configured by making an entry into each section. Example: H335-3-71-0-4-1



Select From Each One Below								
Basic Unit			Function/Range			Output Signal		
	H335	3-1/2 digit, Red LED	41	200 AC μ A		0	None	
	H345	4-1/2 digit, Red LED	42	2 ACmA		1	4-20 DCmA	
			43	20 ACmA		2	0-10 DCV	
Power Supply			44	200 ACmA		6	RS-485 (4-1/2 only)	
	1	120 ACV (3-1/2 only)	45	2 ACA		5A Relays		
	2	85-250 ACV (4-1/2 only)	46	5 ACA		0	None	
	3	9-36 DCV				1	One	
	4	85-250 ACV (3-1/2 only)	51	200 ACmV TRMS		2	Two	
			52	2 ACV TRMS		4	Four	
Function/Range			53	20 ACV TRMS		Excitation		
	11	200 DCmv	54	200 ACV TRMS		0	None	
	12	2 DCV	55	600 ACV* TRMS		1	12 DCV	
	13	20 DCV				2	24 DCV	
	14	200 DCV	61	200 AC μ A TRMS				
	15	600 DCV *	62	2 ACmA TRMS				
			63	20 ACmA TRMS				
	21	200 DC μ A	64	200 ACmA TRMS				
	22	2 DCmA	65	2 ACA TRMS				
	23	20 DCmA	66	5 ACA TRMS				
	24	200 DCmA						
	25	2 DCA	71	4-20 DCmA Process				
	26	5 DCA	72	0-10 DCV Process				
	31	200 ACmV	81	200 Ohm				
	32	2 ACV	82	2K Ohm				
	33	20 ACV	83	20K Ohm				
	34	200 ACV	84	200K Ohm				
	35	600 ACV						

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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.

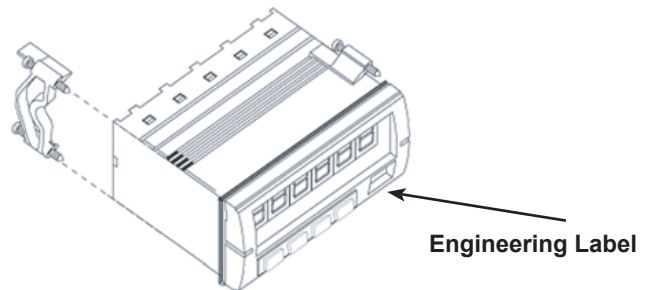
To install the Hawk 3 meter into a panel cutout, remove the clips from the side of the meter.

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 μ V	.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 μ V	.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 μ A	10 nA	.1 μ A	1K Ω	4.5 mA DC
2 mA	.1 μ A	1 μ A	100 Ω	45 mA DC
20 mA	1 μ A	10 μ A	10 Ω	200 mA DC
200 mA	10 μ A	.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 μ A	10 nA	.1 μ A	1K Ω	4.5 mA DC
2 mA	.1 μ A	1 μ A	100 Ω	45 mA DC
20 mA	1 μ A	10 μ A	10 Ω	200 mA DC
200 mA	10 μ A	.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	\pm 5 DCV
2K Ω	.1 Ω	1 Ω	12K Ω	\pm 5 DCV
20K Ω	1 Ω	10 Ω	121K Ω	\pm 5 DCV
200K Ω	10 Ω	100 Ω	1.2M Ω	\pm 5 DCV

