

Electro-Sensors Installation & Operating Instructions

Alarm System DAS-100 to DAS-800

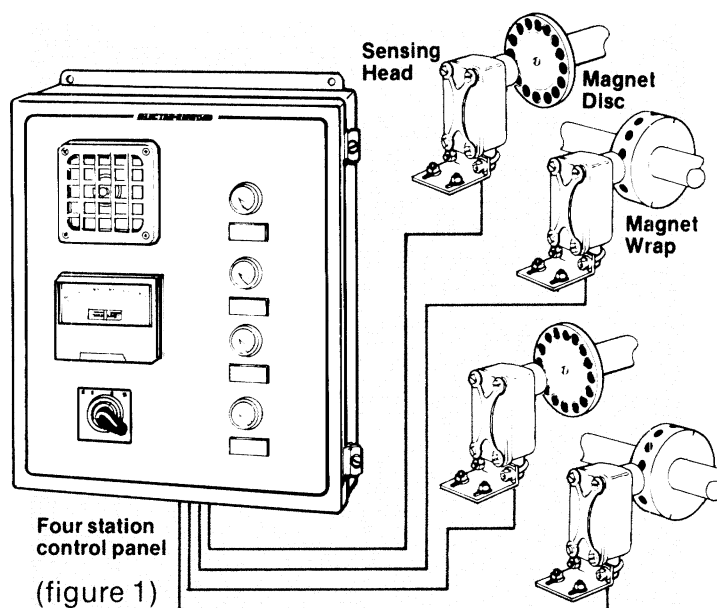
The new Electro-Sensors Alarm System is being used by all industry to simultaneously monitor up to eight shafts. Continuous monitoring detects losses in efficiency or production, prevents damaging equipment, guards against product loss and checks possible dangerous situations. There are two set point controls per shaft for visual and audible alarm, as well as motor shutdown.

Principle of operation

At critical points in the process, turning shafts are fitted with a magnetic disc or wrap which generate alternating magnetic pulses while turning. Sensing heads, mounted near each magnet disc or wrap, pick up these signals and transmit them to the control panel via shielded cables. Each signal is then converted to a voltage proportional to the monitored shaft's speed, and compared with the two set points selected for each sensor. (See figure 1.)

When the speed slows and reaches set point 2, a 100db warning horn sounds and a control panel light indicates the sensor affected. By turning the select switch to the position of the lighted sensor, its speed is shown on the meter. If the speed slows further to set point 1, the relay shuts off the motor powering the operation. The system resets itself when a set point 2 alarm condition is corrected. Up to eight shafts can be monitored at this single control panel.

The meter on the panel continuously displays the speed of the shaft to which the select switch is set. Turning the select switch on the panel to any sensor gives the speed of that shaft on the panel meter. All shafts are continuously and automatically monitored by the system no matter where the select switch is set.



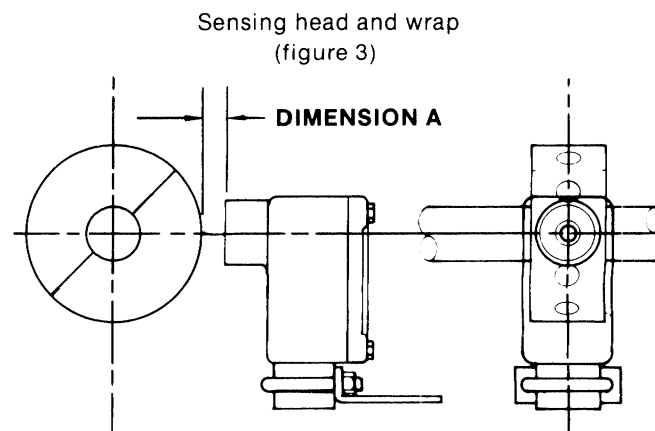
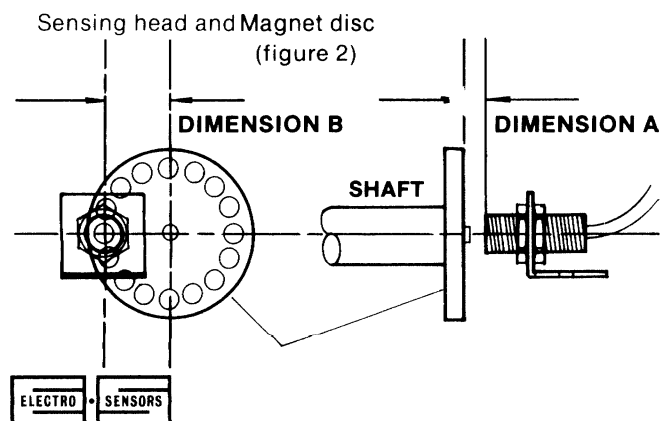
INSTALLATION INSTRUCTIONS

Magnet disc

The end of the shaft to be monitored must be center drilled to a depth of 1/2" with No. 21 drill and tapped for 10-32UNF. After applying Loctite® or a similar adhesive on the threads to keep the magnet disc tight, the magnet disc should be attached, decal side out, with a 10-32UNF machine screw. (See figure 2.)

Magnet wrap

When the wrap is shipped, four allen-head cap screws hold the two halves of the wrap together. These screws must be removed so that the wrap is in two halves. Place the halves around the shaft and screw together so the wrap fits the shaft tightly. Wraps are all custom made to fit a specific diameter. (See figure 3.)



Electro-Sensors Alarm System, DAS-100 to DAS-800

Sensing head installation

The standard sensing head is supplied with a mounting bracket and two jam nuts on the sensor itself. The explosion proof sensing head is supplied with a slotted mounting bracket. Sensing heads should be installed so the center line of the sensor passes through the center line of the magnets as they rotate.

When using a disc (figure 2) the pick-up gap (dimension A) should be adjusted between 1/16" and 1/4" for proper operation. This is achieved by adjusting the jam nuts on the standard sensor and adjusting position of the explosion proof sensor through use of the slotted mounting bracket. Dimension B is 1-5/8" from the center hole of a disc.

When using a wrap (figure 3), dimension A must be between 1/16" and 1/4".

Wiring connections

Connect the sensing head cables to terminal blocks TB1-TB4, sensors 1 to 4 respectively. For an eight sensor unit, (not shown) the top circuit board (labeled A) monitors sensors one through four and the bottom circuit board (labeled B) monitors

sensors five through eight. For each sensor, attach the red lead to terminal 6, the black lead to terminal 5 and both the silver lead and the shield to terminal 4. Wire a set of normally open motor starter auxiliary contacts across terminals 2 and 3 on each terminal block TB1-TB4; this will disable the warning horn and indicator light for a monitored shaft when it is not in operation. Apply 115Vac power to terminal block TB10 by connecting the neutral lead to terminal 1, the hot lead to terminal 2 and the ground lead to terminal 3.

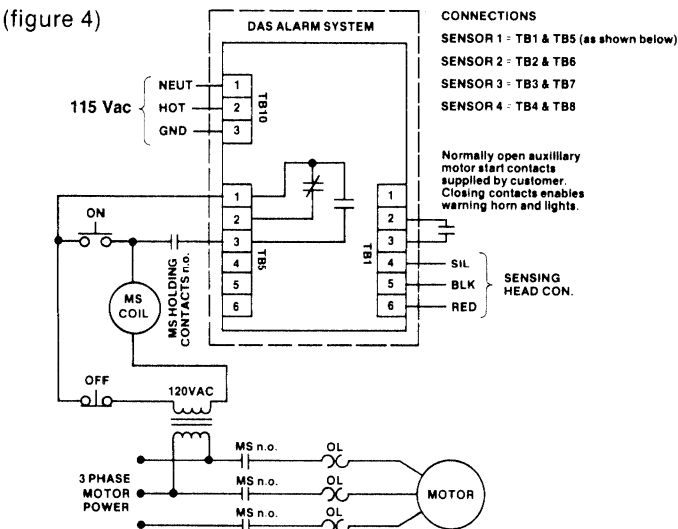
Consult the sample wiring diagram for use of the SP1 relay contact outputs. SP2 is used internally to sound the warning horn and light the indicator light when there is a slowdown. SP1 is used for motor shutdown. There is a set of SP2 relay contacts available for use in shutting down preceding or following equipment when an alarm condition exists. (See figures 4 and 6.)

Installation Note: The complete chassis should be removed before punching or drilling the hole for cable entrance or conduit.

WIRING DIAGRAM

This is a typical motor shutdown and alarm wiring circuit for one sensor. Other circuits may be used and some equipment may require different wiring.

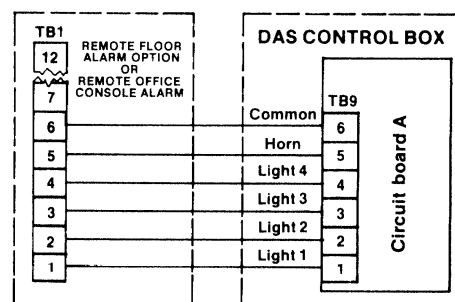
Typical motor shutdown/alarm circuit for sensor number one.



Remote floor alarm *

For alarm systems with four or fewer sensors connect the *remote alarm* wires to terminals as shown in figure 5. For a five or more sensor unit, terminals seven through twelve on TB1, *remote floor alarm box*, will be used and connected to TB9 on circuit board B. Wiring will be as follows:

Remote floor alarm	DAS control circuit board B
TB1-7	connect to TB9-1
TB1-8	connect to TB9-2
TB1-9	connect to TB9-3
TB1-10	connect to TB9-4
TB1-11	connect to TB9-5
TB1-12	connect to TB9-6



Remote Alarm Wiring (figure 5)

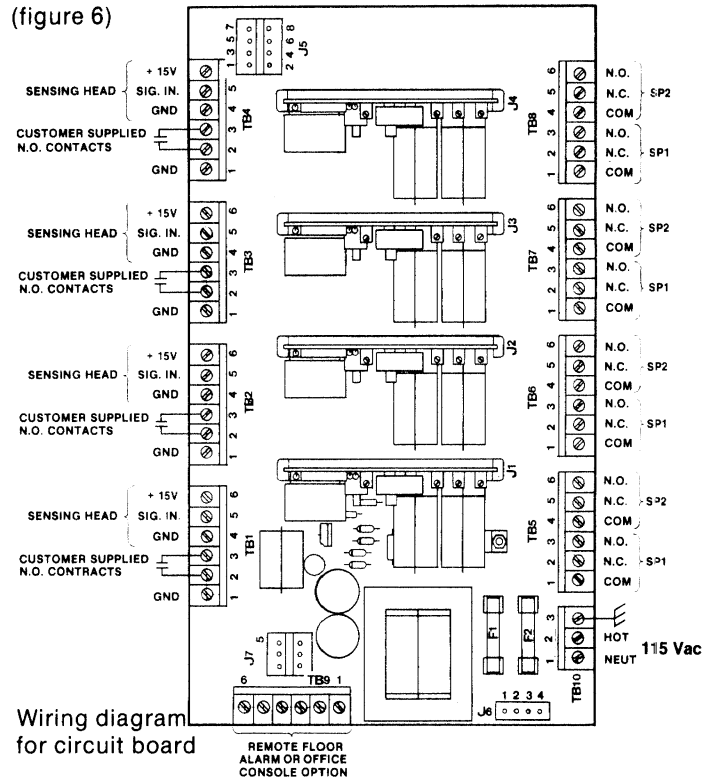
Remote office console alarm*

Connect wires to terminals as illustrated in figure 5 for a unit with four or less sensors. For a five or more sensor unit, terminals seven through twelve on TB1 of the remote office console alarm are connected to TB9 of circuit board B. Wiring will be as follows:

Remote office console alarm	DAS control circuit board B
TB1-7 connect to	TB9-1
TB1-8 connect to	TB9-2
TB1-9 connect to	TB9-3
TB1-10 connect to	TB9-4
TB1-11 connect to	TB9-5
TB1-12 connect to	TB9-6

*Both the remote floor alarm and the remote office console alarm are wired to TB9 of the DAS alarm system. Sufficient voltage is provided to operate both units.

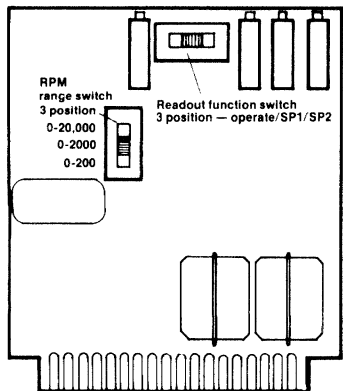
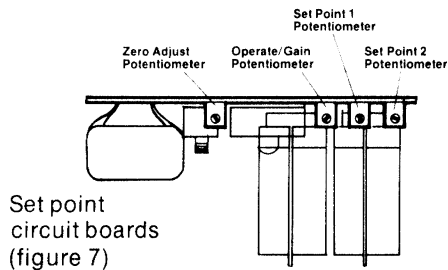
(figure 6)



OPERATING INSTRUCTIONS

Analog meter calibration

Each shaft sensor must be calibrated independently. Use the *select switch* on the panel cover to select the sensor to be calibrated. Consult figure 7 and place the *rpm range switch* on each set point circuit board, in its appropriate position. Place the *readout function switch* for each sensor in the OP position. With the monitored shaft stopped and 115Vac connected, adjust the *zero adjust pot* for a reading of zero on the meter.

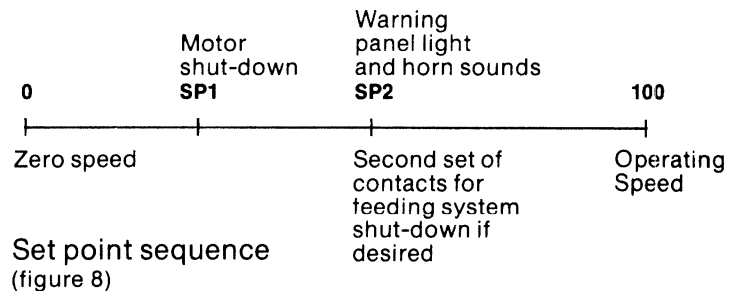


After adjusting the *zero pot*, run the monitored shaft at the normal operating speed and adjust the *gain pot* for full meter deflection (100%). Because shaft speeds may be different, the meter should be calibrated by percentage — 100% being the normal operating speed.

Since there is interaction between the zero and gain adjustments, it may be necessary to repeat the above procedure to obtain accurate zero speed and full meter deflection readings. Repeat this calibration procedure for each remaining shaft sensor.

Set Point adjustment

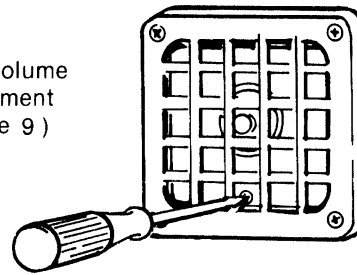
Use the panel cover *select switch* to select the sensor whose set points are to be adjusted. Place the *readout function switch* in the SP1 position and adjust the *set point 1 pot* for the desired trip level. Place the *readout function switch* in the SP2 position and adjust the *set point 2 pot* for its desired trip level. Return the *readout function switch* to the OP position. SP1, used for motor shutdown, must be set for slower speeds than SP2. Repeat this set point adjustment procedure for the remaining sensors.



Horn volume adjustment

Turn the screw on the bottom front portion of the horn counterclockwise for louder sound, and clockwise for softer. This adjustment has one turn from stop to stop. (See figure 9.)

Horn volume adjustment (figure 9)



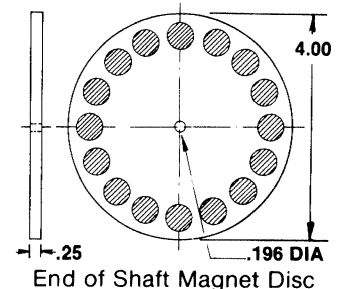
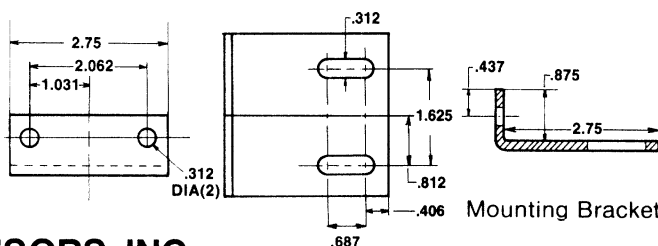
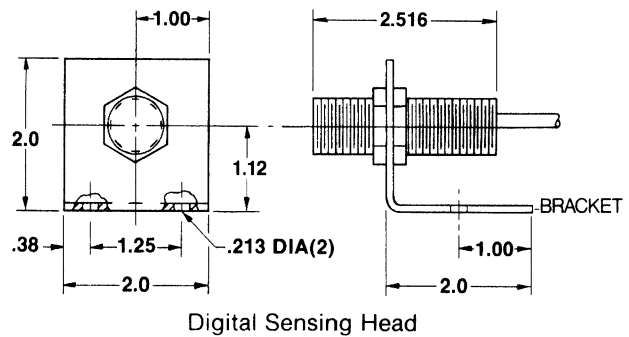
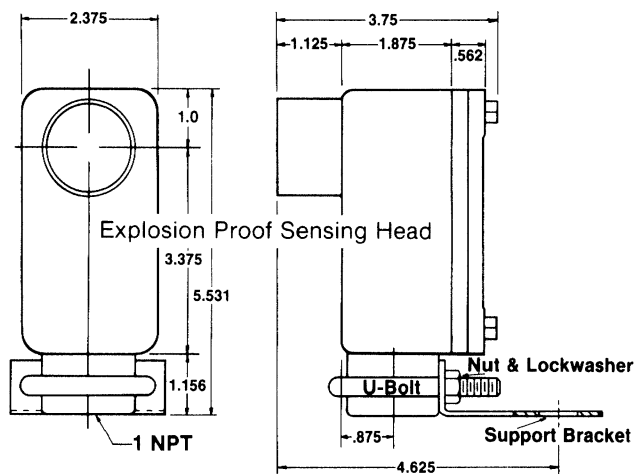
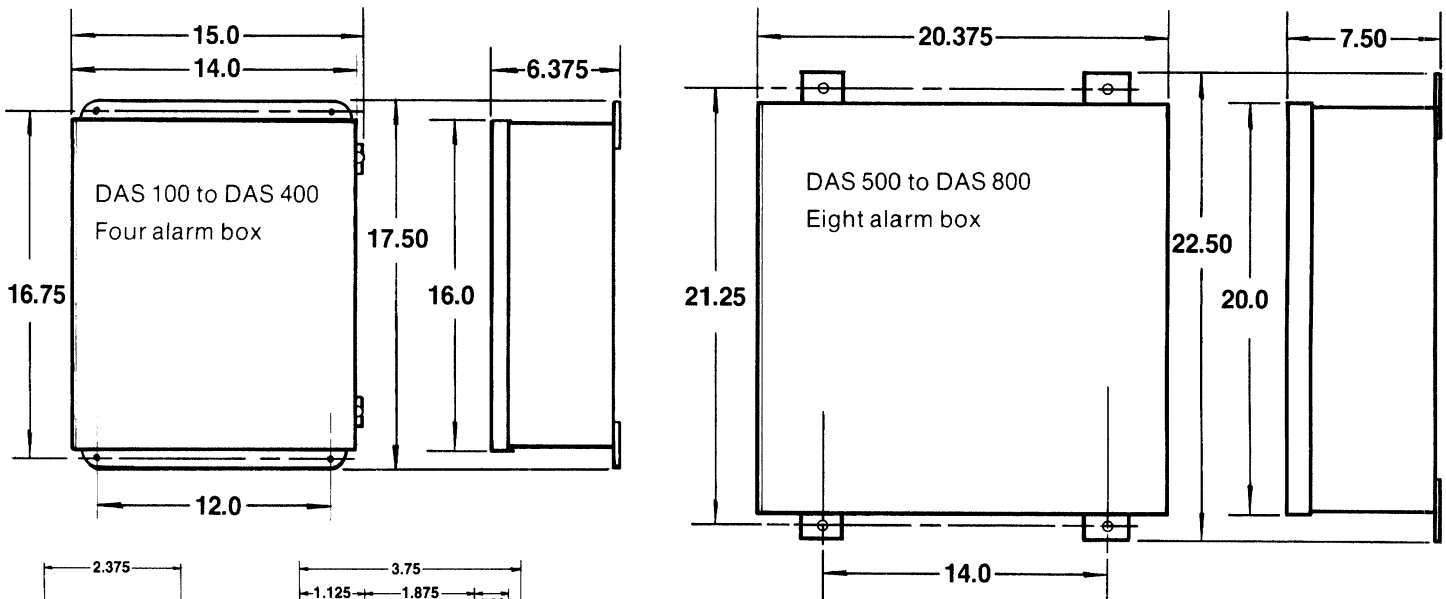
DAS-100 to DAS-800 GENERAL SPECIFICATIONS

Power Required	115Vac, 50-60 Hz	Magnet Disc	4" 16 Magnet
Electrical Connections	Terminal Strip	Sensing Head	Aluminum
Housing	JIC Dust Tight	Indication	Analog or Digital
Calibration	15 Turn Potentiometer		Tachometer, Red Light
Set Point Relay	SPDT-5 AMP-115VAC		for Each Leg
	Resistive	Signal Cable	3 Wire Shielded

Specifications Subject to Change Without Notice

DIMENSION DRAWINGS

Dimensions in inches.



ELECTRO-SENSORS, INC.