

OSU Temperature activated automatic aeration controller

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This document describes a simple temperature actuated aeration controller designed by OSU that can be assembled from readily available commercial parts by a licensed electrician. It can control from 1 to 3 small aeration fans. See OSU Fact sheet **BAE-1101 Aeration and Cooling of Stored Grain** for more information on the design and operation of grain aeration systems.

OSU makes no claims or warranty on this design or its installation. It is the responsibility of the installer to insure all applicable regulations are followed during installation and operation. Proper grounding and placement of the controller away from hazardous areas is required. When the system is active, the fans can turn on without warning. Safety shielding should be installed and warning information posted to inform people of the potential dangers of this type of system.

The controller consists of a line voltage thermostat which activates relays to start the fans when the temperature falls below a preset limit. An elapsed-time clock is also activated by the thermostat to keep track of the total time that fans are operating so that the manager can insure that the aeration duration is sufficient to achieve temperature equalization throughout the entire grain bin. This controller uses time-delay relays to distribute the inrush current when fan motors start. This controller can be modified to control larger fans by using it to activate magnetic motor starters which should be used for all motors of 0.5 horsepower or larger. Controls should be cleaned at least once a year and more often if operated in dusty surroundings.

Table 1. Parts list with suggested sources.

Schematic ID	Part Name	Qty	Description	Manufacturer	Model Number
1	Enclosure (12" x 10" x 5")	1	Enclosure with cover, 12" x 10" x 5"	Weigmann	B121005CH
S2	Line Voltage Thermostat	1	Thermostat, line voltage	Dayton Mfg.	1UHH2
K1, K2, K3	Socket Relay Base	up to 3	Socket for delay timer	Dayton Mfg.	5X852
K1	Fan Relay, no delay	1	DPDT relay	Dayton Mfg.	5X827
K2, K3	Fan Relays, time delay	up to 2	DPDT Relay w/ power on delay timer	Omron elec	H3CR-A8AC100-240/DC100-125
U1	Hour Meter	1	Hour timer, 120 VAC	Redington	722-0001
S1	20 Amp Toggle Switch	1	SPDT toggle switch	Power First	2VLN7
	6-pole Terminal Strip	2	Terminal strip	Ideal	89-206

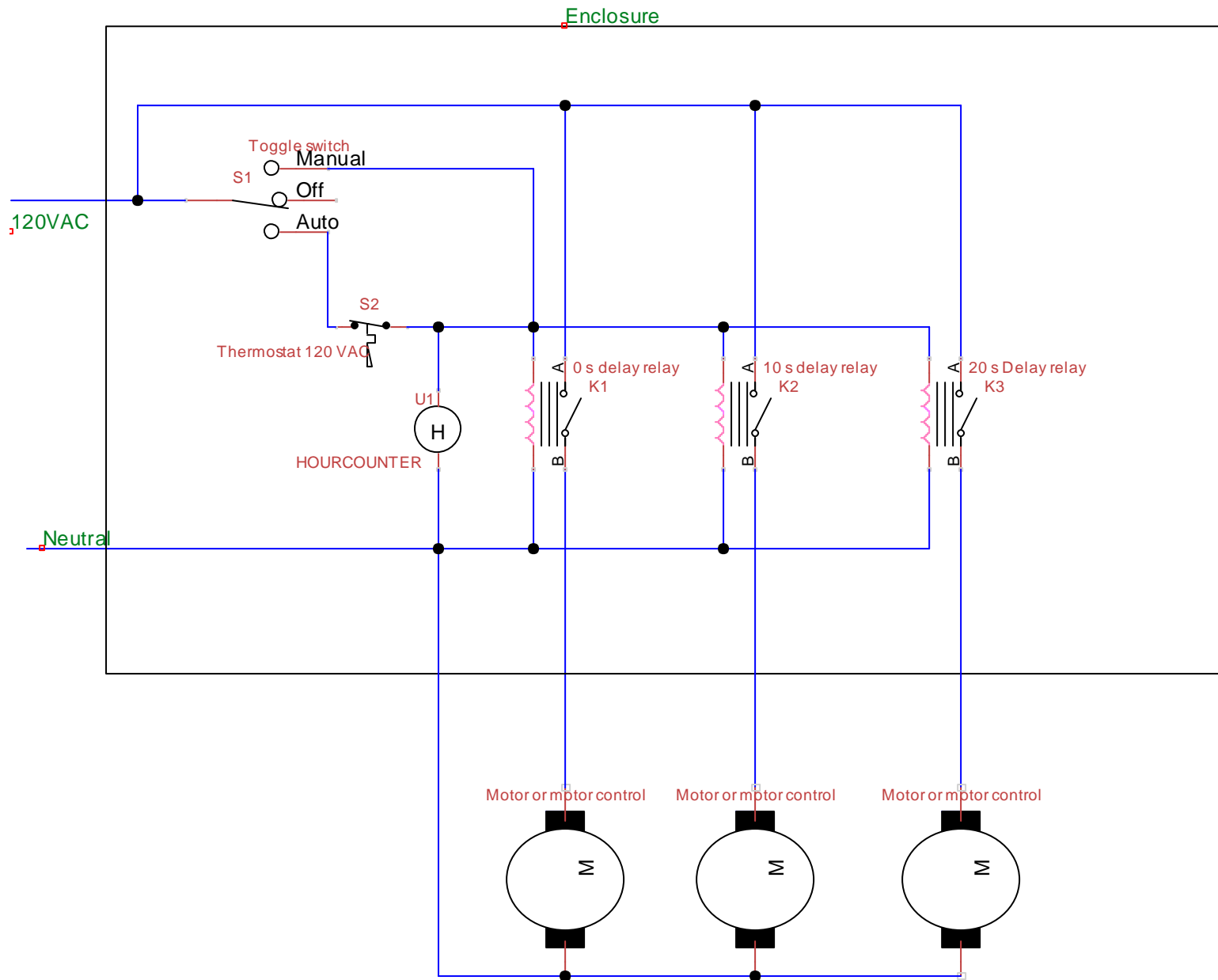


Figure 1. Schematic of Aeration controller with 3 fans.

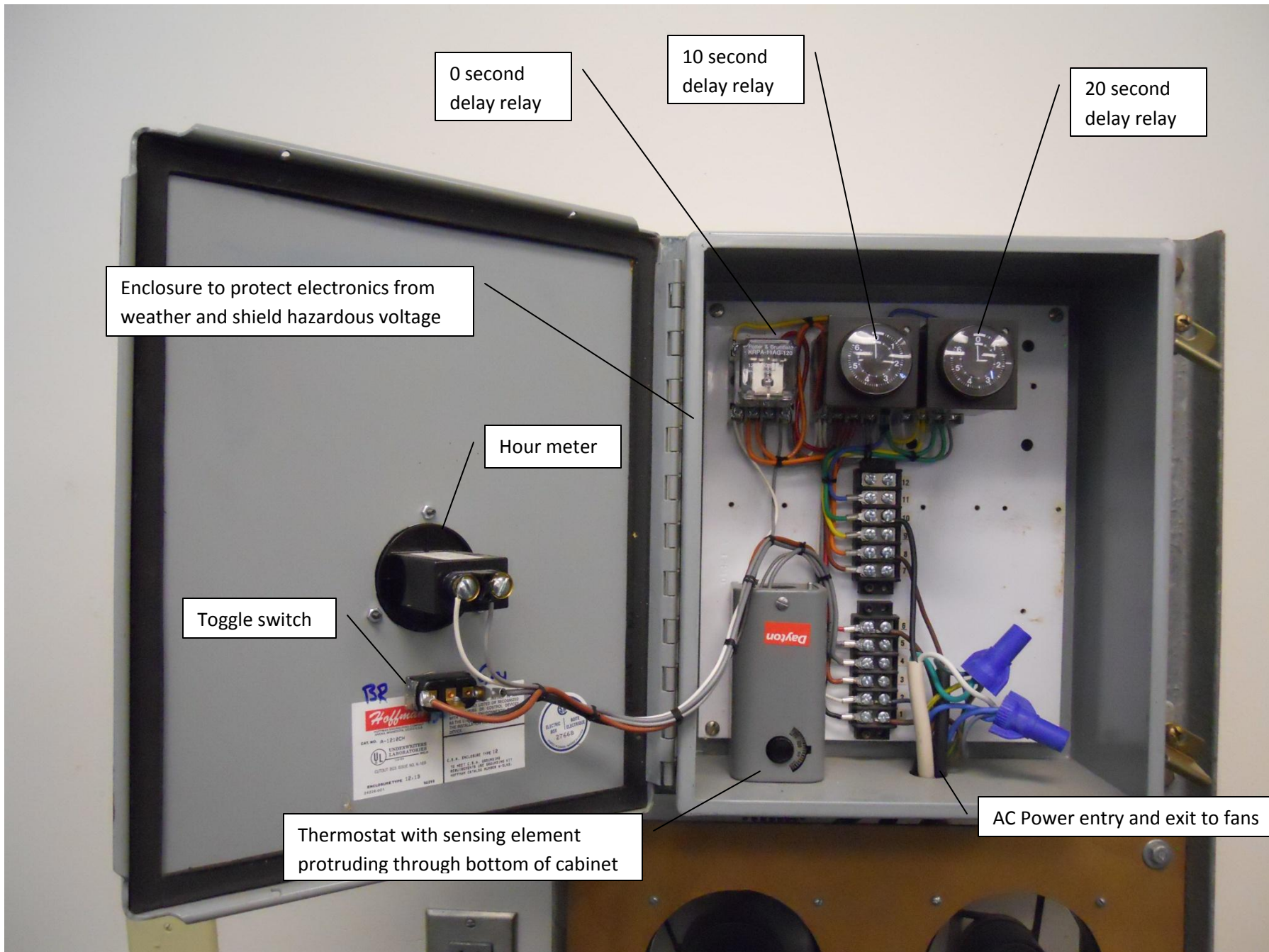


Figure 2. Example aeration controller for 3 fans.