

SP1 A/B/AI

FEEDER CONTROL BOX

**INSTALLATION AND OPERATION
MANUAL**

INDEX

SECTION	PAGE
1.0 Production Specification	3
1.1 Switch settings	3
1.2 Running time potentiometer	4
2.0 Installation and calibration	5
2.1 Fitted conduit adapter	5
2.2 Wiring the SP1	5
2.3 Using existing power supplies	5
2.4 Setting up the SP1	6
3.0 Routine maintenance and servicing	7
4.0 Wiring schematics	

1.0 PRODUCT SPECIFICATION

“SP1” is a simple yet versatile feeder controller that allows the operator to dispense rations of feed using a rotary switch. The rotary switch allows you to select 1 to 15 units of feed and by pressing the start button feed is then dispensed. The SP1/A and SP1/AI have a left and right side-feeding switch.

There is a large variety of feed dispensers available, some operated by vacuum and others having a small “Auger” powered by an electric motor. Some feed dispensers require 12 volts D.C. and others require 24 volts D.C. The SP1 is designed to cope with as many of these variations as possible. The SP1 comes in two versions, a 12 volt D.C. version and a 24 volt D.C. version.

Please note that if an existing power unit is being used and gives an unsmoothed full wave rectified output, the peak voltage should not exceed 24 volts, i.e. the R.M.S. voltage should not exceed 17 volts.

The SP1 controller has additional controls located behind the lid, which enhance the overall versatility of the unit.

1.1 The first of these is the 3-way switch, which allows the installing engineer to select the following options;

- a) X1 feed ration multiplier
- b) X2 feed ration multiplier
- c) X4 feed ration multiplier

The above options can be selected by sliding the switch to the corresponding label located on the circuit board.

A “Pulse” or “Auger” operation can be selected by moving a small “jumper” connector between 3 pin connections on the circuit board located left of the relay. Shorting the top two pins enables “Pulse” operation and shorting the bottom two pins enables “Auger” operation.

With the SP1 in “Pulse” mode, the controller will send pulses of voltage to the feed dispenser to switch a solenoid on and off. Each

time the solenoid is switched on and off the dispenser will dispense one unit of feed. In “Auger” mode, the controller will send voltage to the dispenser for a time interval proportional to the number of feed units selected by the rotary switch.

Most “Pulse” type feed dispensers are set to dispense 1lb. or 0.5 kg of feed. Some dispensers however will only deliver a quarter or a half of this amount at each operation and some method is required of increasing the number of times the dispenser is operated, in order to dispense reasonable amounts of feed. When the 3 way switch is in the “X1” position and “5” units of feed is selected on the rotary switch, the SP1 will send five pulses to the feed dispenser. When “X2” is selected, the SP1 will send out ten pulses to the feed dispenser when “5” units of feed is selected on the rotary switch. When “X4” is selected, twenty pulses will be sent out to the feed dispenser when “5” units of feed is selected on the rotary switch.

Where “Auger” type feeder dispensers are being controlled, the “X1”-“X2”-“X4” switches can be used as a coarse calibration control. Setting the SP1 to “X2” position in “Auger” mode will mean that the running time of the “Auger” per unit of feed will be doubled compared to the “X1” setting. In the same way selecting “X4” will multiply the running time by four compared to the “X1” setting.

- 1.2 A running time potentiometer is used to control the feeding rate. This potentiometer is located centrally on the circuit board. The potentiometer is a 24-turn type, which means that if it is set to minimum (fully clockwise) then the maximum setting is 24 full turns anti-clockwise. Please note older types of SP1 differ in that the minimum range is fully anti-clockwise.

Some “Pulse” type feed dispensers are much slower in operation than others and the running time control allows the SP1 to be set up to cope with any such variations. In the case of “Auger” type dispensers, the amount of feed dispensed is directly proportional to the running time. The running time control therefore allows for fine calibration adjustments in “Auger” mode.

2.0 INSTALLATION AND CALIBRATION

- 2.1 The SP1 is housed in a strong, waterproof enclosure. The waterproofing of this enclosure is however, only as good as the arrangements that are made to connect conduit to it. One 20mm conduit adapter is fitted to the SP1 enclosure to accommodate the conduit from the feeders and power supply to the SP1 controller.
- 2.2 All connections to the SP1 are done through a connector block located in the base enclosure of the SP1. The number of connections made to the connector block and the labelling will differ between the different types of SP1 available.

D.C. power supply for the SP1 controller should be connected to the terminals marked “+” and “-“ “Supply” usually located on the right hand side of the connector block.

The feeders are connected to the left-hand side of the connector block. The SP1/A has a “left” and “right” feeder output, which is configured to switch the positive supply to the feeders. The SP1/B has a “+” and “-“ feeder supply connection for connecting one feeder. The SP1/AI has a “L” for left feeders, “R” for right feeders and “C” for common, connections. This allows the SP1/AI to control A.C. supplied feeders on a separate power supply.

The size of the cabling will depend upon the size of the installation and the types of feeders used. It is therefore advisable to follow the manufacturers recommendations on cable sizes to be used with their feeders.

The SP1/A and SP1/B are factory configured to switch a positive output using a red wire link on the connector block on the SP1 circuit board. If a switched negative supply is needed, then this link needs to be removed completely, and a black wire link using 24/02 cable needs to be made from the empty connection by the relay (left side of connector block) to the black wire connection on the right side of the connector block.

- 2.3 Before any attempt is made to switch on the power supply, the installing engineer should ensure that the polarity of the supply is correct and that the unit is being supplied from a D.C. source at the correct rating (either 12v or 24v). In situations where existing power supplies are being retained, then the installing engineer should ensure that a rectifier is fitted to the power supply where necessary. Some types of feed dispensers may have the rectifier built into the individual control box and in these cases the existing power unit will have an A.C. output. A suitable rectifier will be supplied free of charge upon request. Please note that the rectifier must be fitted to a large metal surface to give necessary heat dissipation. The installing engineer must also make sure that the SP1 unit is the correct type for the supply voltage, a 12 volt SP1 will require a 12 volt supply and a 24 volt SP1 will require a 24 volt supply.
- 2.4 With the SP1 installed and the wiring checked, the installing engineer can now select either “Pulse” or “Auger” type dispensers and either “X1”, “X2” or “X4” mode of operation. For “Pulse” type feeders, in most cases the factory setting of the running time will be suitable. In some cases however, where the feeder operates very slowly, the running time control potentiometer should be turned in an anti-clockwise direction to increase the duration of the output pulse. In all cases the calibration of the feed dispenser should be checked by using the SP1 to dispense say five units of feed and weighing the amount of food dispensed. If the unit is set in “X1” mode and the quantity of food dispensed is insufficient and the feed dispenser cannot be calibrated to give the correct amount, then “X2” should be selected, so that two pulses are given for each unit selected on the SP1 rotary switch. In this case obviously the feed dispenser must be calibrated to give half the desired amount per unit selected on the SP1 rotary switch.

In the case of “Auger” type feed dispensers, the running time control potentiometer can be used as an overall density calibration. The “X1”, “X2” and “X3” switches can be used as a coarse calibration.

3.0 ROUTINE MAINTENANCE AND SERVICING

The SP1 is housed in a strong, waterproof enclosure. It must be noted however, that this enclosure is not suitable for washing with a high-pressure hose. Any cleaning required should be done using luke warm soapy water and a soft cloth. An SP1 treated with care and respect will give years of trouble free service.

Email support is at: support@davlec.com