Integrated Control Systems

SMART PULSER SP1

110 VAC INSTALLATION INSTRUCTIONS
For SP1 Models SP1-110-SO-B and SP1-110-DO-B

Fig. 1

1. Determine the model of mechanical computer on which the pulser will be installed. Remove the hole plug from the pulser head using a small blade screwdriver, and set dip switches 2, 3, and 4 according to the following tables. Note that the switch is ON when moved away from the head wire, and OFF otherwise. See Fig. 1.

	REGISTER MODEL	DESIRED OUTPUT	SWITCH SETTING SW2 SW3 SW4
M O N E Y	V/R 101	100 PULSES PER DOLLAR	OFF OFF ON
	V/R 2001 OR 2002	100 PULSES PER DOLLAR	OFF ON OFF
	V/R 2002E OR VR-10/4	100 PULSES PER DOLLAR	OFF ON ON
	V/R-10	100 PULSES PER DOLLAR	ON OFF OFF

	REGISTER MODEL	DESIRED OUTPUT	SWITCH SETTING SW2 SW3 SW4
G A L L O N S	ANY V/R REGISTER	1 PULSE PER GALLON	OFF OFF OFF
	ANY V/R REGISTER	10 PULSES PER GALLON	OFF OFF ON
	ANY V/R REGISTER	100 PULSES PER GALLON	ON OFF OFF

Fig. 2

2. In order for the SP1 pulser to correct for meter backlash and pump vibration, it must know the normal direction of rotation. Dispense fuel from the target dispenser and note the direction of shaft rotation. Use the diagram in Fig. 2 to locate the Money or Gallons shaft. Set switch 1 on the SP1 pulser to ON for clockwise shaft rotation, or OFF for counterclockwise rotation. If the direction is set incorrectly, the pulser will not generate an output. Now that the configuration is set, push the hole plug back into the pulser head to seal it.

	COMPUTER MODEL	DIRECTION OF SHAFT (ON COMPUTER)	SWITCH SETTING SW1
D I R	ALL	CLOCKWISE	ON
	ALL	COUNTERCLOCKWISE	OFF

Note: If DIP switches are changed, power must be cycled to the pulser before changes will be recognized.

3. Locate an unused 3/4 inch opening in the dispenser's junction box. Route the pulser wires through the hole and screw the barrier into the junction box. Connect the wires as shown in Fig. 3. The pulser should be wired so that power is applied only when the handle switch is on. Note that the pulse output is a contact closure type, and the red wires (and blue wires for dual output models) are not polarity sensitive.

4. Now that the barrier is installed, route the pulser head up through the dispenser to the computer. Slide the pulser shaft over the selected computer shaft (Money or Gallons) and install the cotter pin through both the pulser shaft and the computer shaft. If additional space is required to mount the shaft, or if the dispenser is a dual model, special extensions are available from ICS.

5. Locate a bolt or threaded stud near to the pulser head and mount the stabilizer wire eyelet to it. Bend the stabilizer wire so that the pulser head is parallel to the side of the computer. The stabilizer wire should only prevent the pulser head from rotating. Make sure that the stabilizer wire does not pull on the pulser head, or premature bearing failure could result.

6. Installation of the SP1 pulser is now complete. Run a test transaction and make sure that the pulser output is correct. If it is not, recheck the configuration switch settings. If the pulser generates no output, change switch 1 and cycle power to the pulser.

Fig. 3

DISPENSER JUNCTION BOX

(BLACK) 110VAC HOT
(WHITE) 110VAC NEUTRAL
(GREEN) EARTH GROUND
(RED) PULSE OUTPUT A
(RED) PULSE OUTPUT B
(BLUE) PULSE OUTPUT A
(BLUE) PULSE OUTPUT B

Note: Blue wires are present on dual output models only.

Specifications:
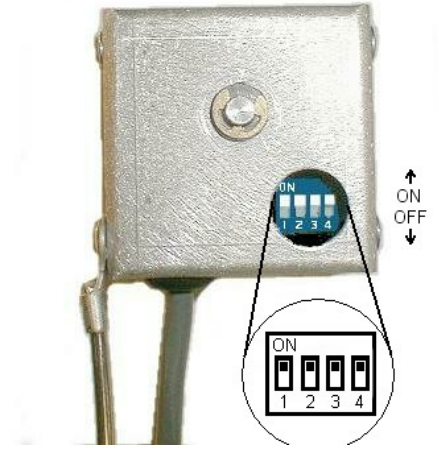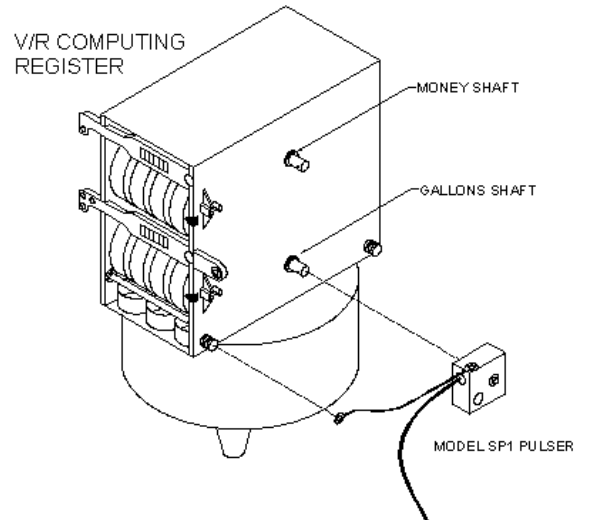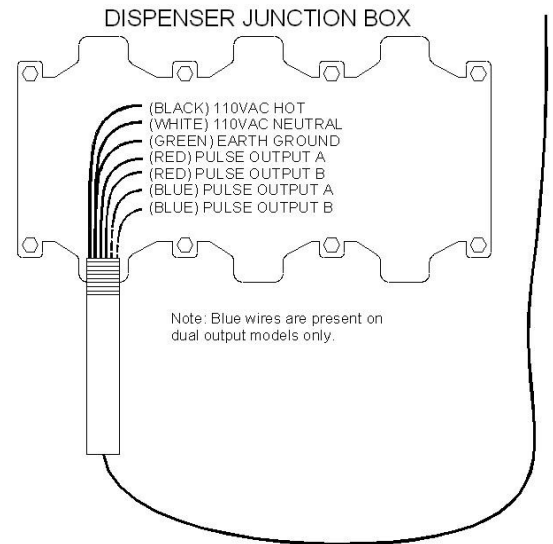|	
Operating Temperature Range:	-40 to 150 degrees F.
Input Voltage Range:	70 to 150 Volts AC
Pulser Output Voltage Range:	5 to 350 Volts AC or DC
Maximum Speed	240 RPM / 60 GPM

6/21/13

SP1 Pulser Troubleshooting Instructions

If the SP1 pulser is being installed, and is not working as expected, please follow these steps to correct the problem. Every SP1 pulser is tested at full speed and at maximum output at the factory. Non-working new pulsers are extremely rare.

P: The pulser does not pulse at all to my card system or console

S: This is a common problem. First, use your multimeter to make sure that the power input wires of the pulser have the correct voltage applied when the pump handle is on. Refer to the wiring diagram (Fig. 3) on the other side of this sheet for the correct voltage.

S: The SP1 pulser senses the direction of the input shaft in order to make the pulsing more accurate. If this direction setting is incorrect, the pulser will not generate an output. Move configuration switch 1 to the opposite position and try it again. Keep in mind that the pulser only reads the switches during power-up, so be sure to cycle the power to the pulser after changing the switch setting.

P: The pulser generates an output, but the console or card system does not agree with the pump.

S: This problem can be caused by several things. First, make sure that you have the pulser mounted to the correct shaft. If your V/R computer displays dollars, the dollars shaft is toward the top and the gallons shaft is toward the bottom of the computer.

S: Check the configuration switch settings on the pulser. If the switches are incorrect for your model of computer, the pulser will generate the wrong number of pulses. If you have changed these settings, remember that the pulser only reads the configuration switch when it powers-up. Be sure to cycle the pulser power each time you change the configuration switch. Refer to the switch setting chart on the other side of this sheet for switch settings.

S: The card system or console you are using may be unable to keep up with the pulser speed. The SP1 pulser will operate up to 250 RPM's. If used on the gallons shaft, this is equivalent to 250 gallons per minute. If used on the dollars shaft, the pulser may be pulsing faster than some older consoles can handle. To test this, dispense a few gallons of fuel at slow speed and see if the console agrees with the pump. Now dispense a few gallons again at full speed. If the console agrees with the pump at slow speed, but is short at full speed, it is likely that the console needs to be updated.

Note:

The output of the SP1 pulser cannot be tested with a multimeter. Most multimeters sample the voltage only a few times per second and the output of the pulser is much too fast for it to register. In order to bench test the SP1 pulser output, use a console, electronic totalizer, or the **PA1** Pulse Analyzer available from ICS.