

### General Information

The FT520 is a batching flow processor with additional output features. It is designed for use with SeaMetrics flow meters and flow sensors, as well as other units which have frequency output proportional to flow. In addition to batch function, the FT520 indicates flow rate and accumulated total in large digits on an easily-read backlit display. Units are user selectable, and range from milliliters per second to millions of gallons per day.

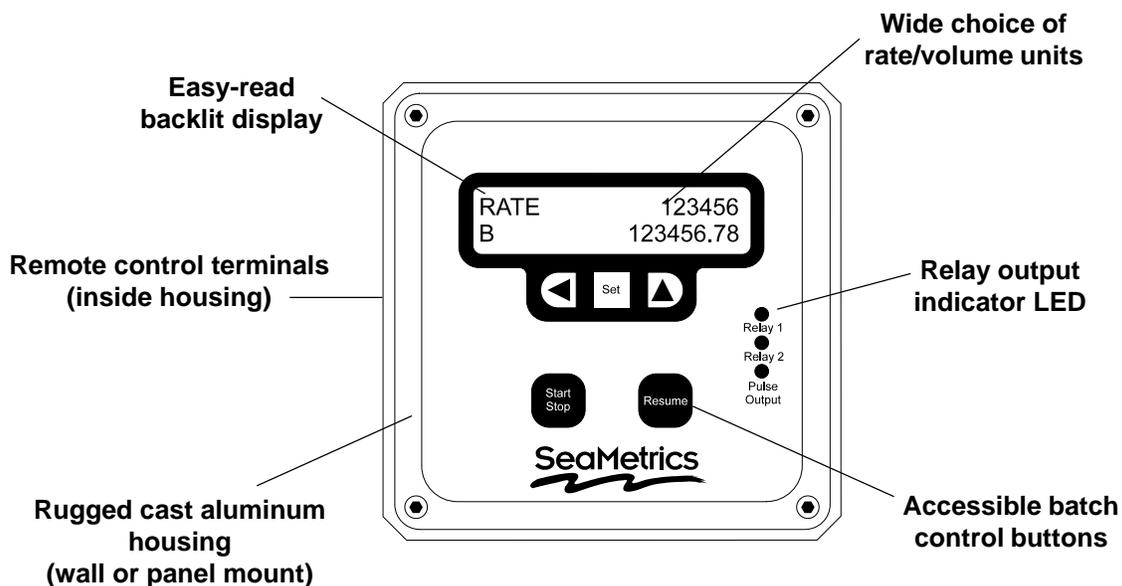
Batch output is controlled by two relays. The main relay starts and stops the batch as a set. The auxiliary "prewarn" relay can be used to operate a second valve, in order to have a staged shut off at the end of the batch, for maximum accuracy.

Analog output (4-20 mA, 0-10 VDC, 0-5 VDC) is included for applications requiring it, such as flow rate logging. Two programmable pulse outputs are also standard, and can be used, for example, to provide proportional chemical feed with a pulse-responsive metering pump.

### Specifications

<b>Power</b>	115 VAC (220 VAC optional), 50/60 Hz; 12 VDC
<b>Temperature</b>	32° - 130° F (0° - 55° C)
<b>Enclosure</b>	Precision cast aluminum, NEMA 4X
<b>Batch Outputs</b>	Two Form C SPDT relay, 115 VAC 5A max
<b>Max Pulse Output</b>	100 mA at 60 VDC
<b>Memory Type</b>	Non-volatile EEPROM auto-backup
<b>Sensor Power</b>	12 VDC, 10 mA
<b>Totalizer</b>	8 digit
<b>Rate Display</b>	5 digit
<b>Volume Units</b>	Gallons, cubic feet, cubic meters, liters, million gallons
<b>Time Units</b>	Seconds, minutes, hours, days
<b>Analog Output</b>	4-20 mA, 0-10 VDC, 0-5 VDC opto-isolated
<b>Sensor Input</b>	Open collector current sink, ESD protected
<b>Max Input Frequency</b>	1,000 Hz
<b>Shipping Weight</b>	7 lbs

### Features

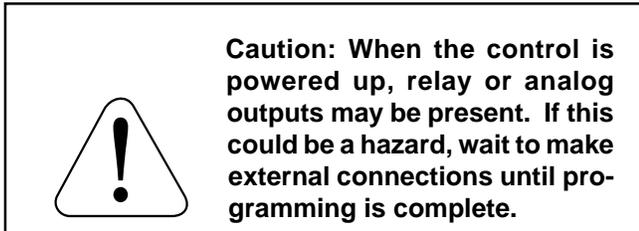


## Installation

**Wall Mounting.** Using the four screws provided, attach the two foot brackets to the sides of the enclosure. Then attach the unit to any secure surface by inserting screws through the mounting holes in the foot brackets.

**Panel Mounting.** Follow the dimensions given for "Panel Cutout". Be sure to include the four corner screw holes. After cutting and drilling, place the front plate on the front side of the panel with its gasket against the panel, and the remainder of the square housing on the back side. Slide the screws through the four holes drilled in the panel, and into the threaded holes in the housing. Tighten until the gasket is firmly compressed against the panel.

**Expose Terminals.** Remove the four screws which hold the front plate to its flange. Remove the front plate. The display board is attached to this front plate. It is also connected to the power board by a ribbon cable. For convenience this cable can be disconnected, while making connections. Connections can be made inside the enclosure, or the terminals can be unplugged by gentle tugging for easier access.



**Sensor Connection.** Follow the "Connections" diagram to connect either two or three wires from the flow meter or flow sensor.

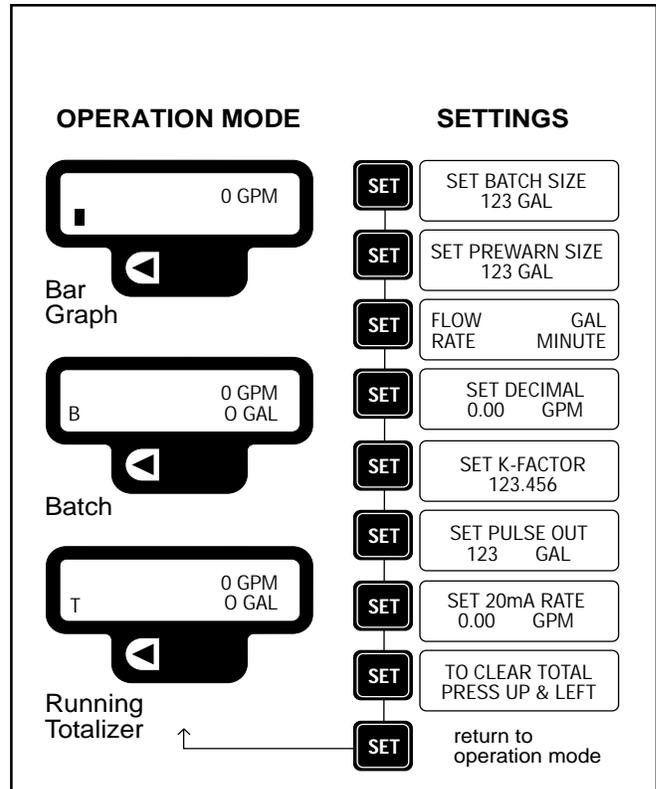
**Batch Control Connection.** Connect the valve or other device(s) to be controlled for starting and stopping the batch to the appropriate relay terminals. Note: if the staged shutoff ("prewarn") will not be used, connect to relay one only. Relay 1 remains energized for the entire batch cycle. If a staged shutoff is desired, connect the main valve to Relay 2 (early shutoff) and the low-flow valve to Relay 1.

**Analog Connection.** This output can be configured 4-20 mA, 0-10 V or 0-5 V by placing a jumper in the correct position on the analog header. The switch next to the header selects active (powered) or passive (unpowered) output. When using the 12 VDC powered input you may only select passive output.

**Power Connection.** Connect AC or DC power as

desired to the appropriate terminals. For safety, if using AC power, be sure to connect the ground terminal provided to a good earth ground. If using 12 VDC, use a PC1 (part # 05040) or equivalent 12 VDC 500 mA power supply.

Replace the front panel, taking care to reconnect the ribbon cable if it has been disconnected. When power is switched on, the display should light up immediately with meaningful letters or digits.



## Settings

**Set Batch Size.** Set the batch size for the desired number of units, using ◀ and ▶ keys. If the staged shut-off feature is not being used, this is the only setting required for the batch.

**Set Prewarn.** This is only used for a staged shut-off. The number set is the number of units early (before the end of the batch) that Relay 2 will shut off.

**Set Flow Units.** Use ▲ to select volume units. Use ▶ to select the particular unit desired (gallons, liters, etc.). Then use ▲ to switch to time units. Again, select the unit desired. Press SET to advance to the next menu.

**Set Decimal.** Use **◀** to select zero, one, or two decimal places on the flow units. Press **SET** to advance to the next menu.

**Set K-Factor.** The unit will not function properly until this number is entered. The K-factor is simply the number of pulses which the flow meter or flow sensor puts out per gallon of liquid. It is marked on the Model/Serial tag of SeaMetrics flow meters and flow sensor fittings. On adjustable flow sensors, the K-factor must be taken from the chart in the flow sensor instructions, based on pipe size. Set the number with **◀ ▶** keys. The digit which is underlined is the one being set. The **◀** moves one digit to the left. The **▶** increases the digit. When the appropriate number has been set, press **SET** again to move on to the next menu item.

**Set Pulse Out.** An output pulse is activated at the selected volume intervals if this feature is in use. If a pulse output is not needed, pulse out does not need to be set. Press **SET** to move on to the next menu item.

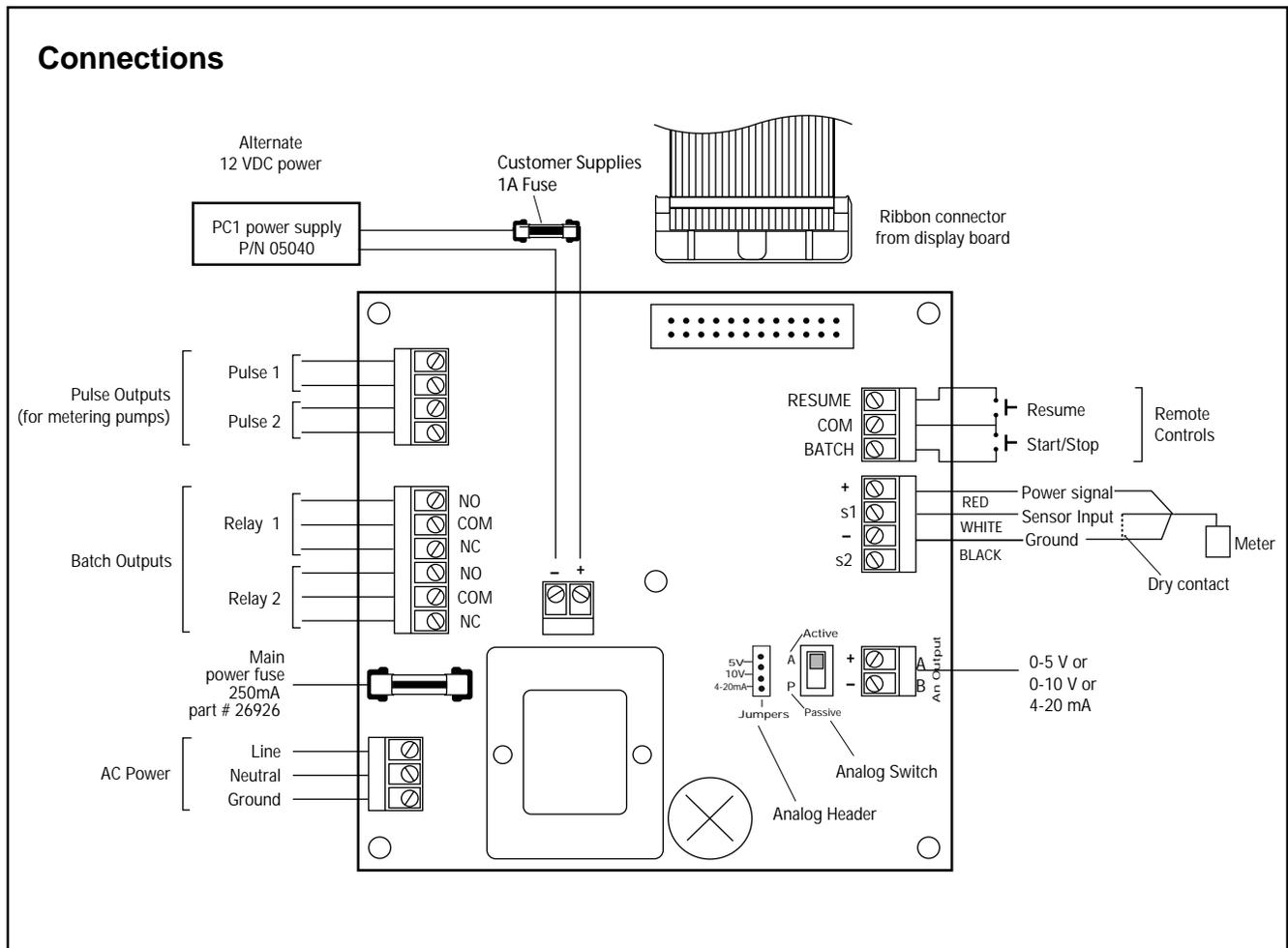
**Set 20 mA Out.** The “SET 20mA RATE” programs the flow rate at which the output is 20 mA, 5 V or 10 V. Use **▶** and **◀** to set the maximum flow rate for full scale output. Press **SET** for next menu item.

**Clear Total.** This function resets the running total back to zero. It is unrelated to the regeneration function, and can be ignored unless it is needed. To reset to zero, press **▶** and **◀** simultaneously. Press **SET** to return to batch mode.

## Operation

**Start Batch.** Pressing the Start/Stop key starts the batch by energizing Relay 1. The indicator for Relay 1 will light, indicating normal operation. The indicator for Relay 2 may also light, depending on the prewarn setting. If staged shut-off is being used, the Relay 2 indicator light should go out before the end of the batch, at the prewarn set point.

The batch will continue on to the set amount unless it is halted in the middle by pressing the Start/Stop key again.



**Stop Batch/Resume Batch.** Pressing the Start/Stop key anywhere in the batch will stop it. It will remain stopped until the Resume key is pressed. Pressing the Start/Stop key again allows the batch to restart from zero.

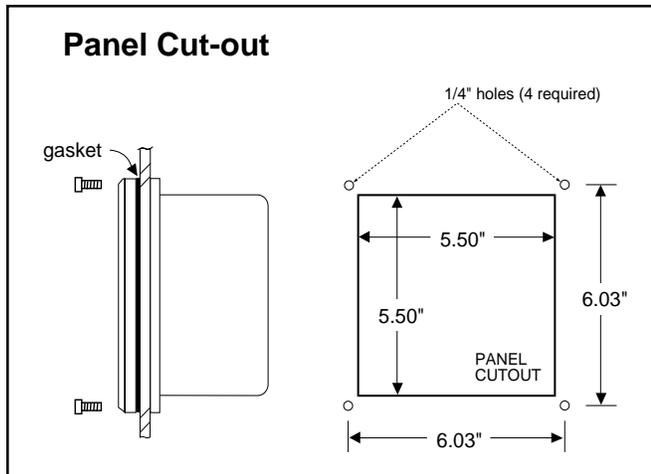
**Choice of Displays for Batching.** When in Operation Mode, press  to change the type of display. Running Totalizer ("T") accumulates a Total Flow until it is reset. Batch ("B") accumulates the flow of the present batch only, then resets. Bar Graph ("█") graphically indicates from left to right, how much of the batch has already accumulated.

**Repair**

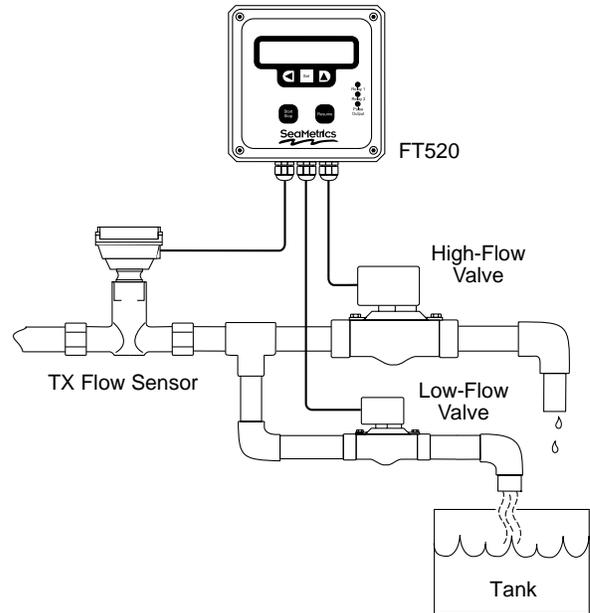
The only field-repairable component on the FT520 is the fuse. If failure is due to a cause other than a blown fuse, it is necessary to replace the entire board stack. Contact your distributor for information.



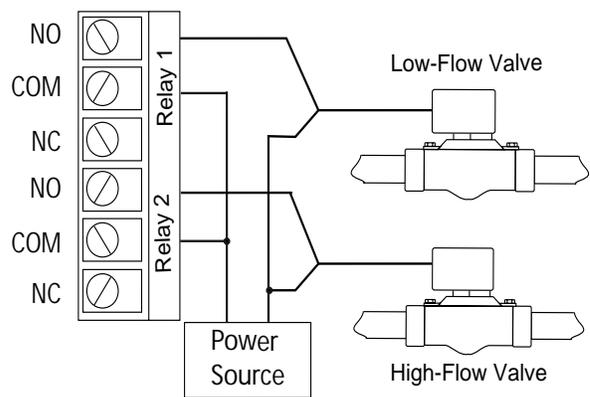
**Caution: Always disconnect power to the unit before opening the terminal cover. Do not reconnect power until all connections have been made and the terminal cover has been replaced.**



**Staged Shut-off Application**



**Conection for Staged Shut-off**



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