

Model PSB Portable, Self-contained Peristaltic Sampler



Model PSB Portable Self-Contained Peristaltic Sampler



PSB Control Keypad



The Model PSB Fits Easily in Most Manholes

◆ Self-contained System.

The PSB is a completely self-contained portable peristaltic sampler, providing the most economical choice for basic composite sampling needs. It comes with bottle full shut off switch, contact closure input, and resident time and flow-based programming. (See Ordering Information for available options.) The PSB is lightweight (less than 22 pounds with standard battery and empty bottle) and has a convenient carrying handle. When latched, it is rated NEMA 4X/ 6. Power can be supplied through a 12-volt battery or 110–220 VAC power supply.

◆ Reliable Peristaltic Pump.

Model PSB samplers use a field proven 1/4-inch ID peristaltic pump to collect samples. The pump is made of advanced thermoplastics to resist corrosion and promote longer tubing life. The pump rollers and tubing can be visually inspected without taking the pump apart. To reduce maintenance and replacement costs, the 1/4-inch ID pump uses Pharmed® long-life tubing. Unlike other samplers in its price range, the Model PSB sampler delivers consistent and

accurate sample volumes by using fluid sensor technology coupled with sophisticated software.

◆ Versatile Controller.

The PSB sets the standard in the sampler industry for performance and price. Its microprocessor-based controller offers advanced functionality and features such as data logging, review of settings and operating status, and a variety of flow and time modes. With its step-by-step menu format, dedicated-button keypad, and large backlit LCD, the controller is simple to setup, even in the dark! Easy to understand prompts and shortcut keys save manpower and time by enabling the operator to quickly change or review programming and settings, avoiding frustrating navigation through long, complicated menu structures.

◆ Composite Sampling.

The PSB is well suited for non-toxic applications. Dedicated to composite sampling, bottles are quickly and easily exchanged. The PSB is suitable for a wide variety of sampling applications in many locations,

including manholes. Samples can be cooled by using ice packs or ice contained in a sealed bag.

◆ Bottle Options.

Extra bottles and lids are available for quick and easy field replacement, enabling filled bottles to be sealed with clean lids for transport.

◆ Comprehensive, Flexible Programming.

The Model PSB provides sampling programming that is unmatched in its price range. Its exceptional software is designed to be highly flexible and easy to use. The menu-driven system provides many programming features. (See partial listing in Specifications on page 2.)

◆ Durable Construction.

The PSB sampler case has thick walls made of impact and corrosion-resistant structural resin. Also, watertight connectors are provided for external power, contact closure/pulse input, and the optional 4–20-mA input. The case has a limited lifetime guarantee, just one of the many reasons this well-built sampler is an excellent value for its price category.

Specifications

Overall Size	W 20.5 in. (52.07 cm) x H 16.75 in. (42.55 cm) with carrying handle vertical x D 8.5 in. (21.59 cm)
Weight (dry)	16 lbs (7.26 kg) with empty sample bottle and without battery; 12 volt, 7 amp-hour (standard) battery 5.5 lbs (2.4 kg); 12 volt, 17 amp-hour battery 15.0 lbs (6.8 kg).
Environmental Protection	NEMA 4X/6 structural resin housing around electromechanical components
Sample Cooling	Contained ice or alternative ice (ice pack, gel pack, etc.)
Temperature Limits	32–122°F (0–50°C)
Sample Pump	High-speed 1/4-inch ID peristaltic 12 VDC pump with impact and corrosion-resistant plastic pump body and tri-roller mechanism
Pump Tubing/Tubing Life	Pharmed® long-life tubing/typical 1000 hours life
Maximum Lift	28 ft (8.5 m)
Transport Velocity	927 ml per minute @ 10 ft head height
Sample Volume	Programmed directly in one-ml increments
Repeatability	Typical ± 5% of the set sample volume
Fluid sensor	Continuity type or optional non-contacting ultrasonic
Membrane Keypad	Hermetically sealed 24-key, multiple function keypad with 2-line by 20-character alphanumeric backlit LCD
Sample Programming	Programming features include, but are not limited to:
	<ul style="list-style-type: none">• Data logging (512-event capacity)• Flow proportional pacing (contact closure)• Flow pacing with time override capability• Flow pacing with delay sampling feature• Flow pacing with maintained event sampling• Totalized flow pacing (analog input)• Uniform and non-uniform time intervals• Program delay (time or flow)• Sampling based on external device input• Real-time clock• Password protection• Settable sample volume• Pump tubing life warning indication• Manual test cycle• Activity review log (current and past)• Intake fault alert• Intake line rinse• Intake line purge• Automatic shut-off• Power fail/auto restart
Internal Clock	Indicates real time with ± 1 minute per month accuracy
Internal Battery Backup	5-year internal lithium battery to maintain program logic, RAM memory, real-time clock, and date
Power Requirement	Standard: Internal 12-volt, 7-amp-hour battery Optional: Internal 12-volt, 17-amp-hour battery or 110/220 VAC power supply (for use without battery)
Input/Output (optional)	Contact closure or 12 VDC pulsed input with or without 4–20-mA input and/or RS-232 output in various combinations
Warranty:	One year from date of shipment.

Ordering Information

Model PSB Sampler Spare Parts/Accessories

- **Battery Chargers:**
 - Standard-output Rapid/Float 2-stage Charger (12 VDC @ 750 mA; for 110 VAC operation) P/N 885505
 - High-output Rapid/Float 2-stage Charger (12 VDC @ 1.25 A; for 110/220 VAC operation) P/N 889828
- **Extra Batteries:**
 - 12 volt, 7-amp-hour battery P/N 690539
 - 12 volt, 17- amp-hour battery P/N 690536
- **External 110–220 VAC Power Supply P/N 889926**
 - Converts line power to 12 VDC to power sampler instead of battery.
- **Suspension Harness P/N 885513**
- **Quick Disconnect Fittings**
 - Female quick disconnect fitting P/N 552104
 - Male quick disconnect fitting P/N 552105
- **Extra Bottles**
 - 2-gallon plastic bottle P/N 687550
- **Replacement Strainer**
 - ¼-inch PVC strainer P/N 889146
 - ¼-inch stainless steel strainer P/N 579595••
- **Contact/Pulse/Analog Input Cables:**
 - 3-foot (1 m) long, 4-pin contact/pulse/analog cable P/N 818016
 - 10-foot (3 m) long, 4-pin contact/pulse/analog cable P/N 818018
 - Serial Output 6-inch RS-232 Patch Cable P/N 810059
- **Replacement Pump Tubing**
 - 18" Pharmed® P/N 889924
 - Bulk Pharmed® tubing P/N 566927 (please specify desired length in feet)
- **Bulk Intake Hose**
 - ¼ inch clear PVC P/N 566926 (please specify desired length in feet)
- **Extra Manual**
 - P/N MAN-PSB

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Ordering Information

MODEL NUMBER															
PSB4 1/4-inch ID peristaltic pump, self-contained portable sampler system															
POWER SOURCE															
A Internal 12 volt, 7-amp-hour sealed lead acid battery B Internal 12 volt, 17-amp-hour sealed lead acid battery C External 110-220 VAC Power Supply (for use without battery)															
BATTERY CHARGER TYPE															
1 None 2 Standard-output rapid/float two-stage charger (12 VDC @ 750 mA; for 110 VAC operation) 3 High-output rapid/float two-stage charger (12 VDC @ 1.25 A; for 110/220 VAC operation)															
INPUT/OUTPUT OPTION (3' input cable included with all units and patch cable for RS-232 output when applicable)															
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">A Contact closure input</td> <td style="width: 50%; border: none;">E 12 VDC pulsed input</td> </tr> <tr> <td style="border: none;">B Option A plus 4–20-mA input</td> <td style="border: none;">F Option E plus 4–20-mA input</td> </tr> <tr> <td style="border: none;">C Option A plus RS-232 output</td> <td style="border: none;">G Option E plus RS-232 output</td> </tr> <tr> <td style="border: none;">D Option B plus RS-232 output</td> <td style="border: none;">H Option F plus RS-232 output</td> </tr> </table>								A Contact closure input	E 12 VDC pulsed input	B Option A plus 4–20-mA input	F Option E plus 4–20-mA input	C Option A plus RS-232 output	G Option E plus RS-232 output	D Option B plus RS-232 output	H Option F plus RS-232 output
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D Option B plus RS-232 output	H Option F plus RS-232 output														
FLUID SENSOR															
1 Continuity sensor 2 Ultrasonic sensor															
BOTTLE CONFIGURATION															
A 1 bottle for non-toxic liquids with bottle full sensor															
BOTTLE TYPE															
1 2 gallon square plastic bottle with spout															
SAMPLING HOSE TYPE (all 1/4-inch ID)															
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">A None</td> <td style="width: 50%; border: none;">H PVC hose -- 50 ft.</td> </tr> <tr> <td style="border: none;">F PVC hose -- 10 ft.</td> <td style="border: none;">J PVC hose -- 100 ft.</td> </tr> <tr> <td style="border: none;">G PVC hose -- 25 ft.</td> <td style="border: none;"></td> </tr> </table>								A None	H PVC hose -- 50 ft.	F PVC hose -- 10 ft.	J PVC hose -- 100 ft.	G PVC hose -- 25 ft.			
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G PVC hose -- 25 ft.															
SAMPLING STRAINER TYPE															
1 None 2 PVC strainer 3 100% stainless steel strainer															
Manual included with all samplers.															
PSB4															
							Configuration Number								

Select one of each category

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In the interest of improving and updating its equipment, Manning reserves the right to alter specifications to equipment at any time.

Engineering Specifications

1. A Manning Model PSB series sampler is suitable for automatic collection and preservation of composite non-toxic liquid samples.
2. The enclosure is made of structural resin with NEMA 4X/NEMA 6 ratings and ABS clasps.
3. All wetted parts have a minimum ID of ¼-inch and are stainless steel or PVC (optional strainer), PVC (sampling hose), or Pharmed® (pump tubing).
4. The sampler incorporates a high-speed ¼-inch ID peristaltic pump with three rollers to increase tubing life and improve consistency of sample delivery. The pump body is constructed of corrosion- and impact-resistant polycarbonate.
5. Sample liquid is under forced flow at all times and does not pass through a metering chamber, valves, or distribution plate. Sampler is equipped with a liquid sensing system that calculates the flow rate of the liquid in the intake line every collection cycle.
6. The sampler is capable of collecting composite samples. It is equipped with an overflow protection mechanism that automatically terminates any further sampling once it has been activated.
7. Bottle full condition is detected by using a float-type switch located in the bottleneck. It is easily removable for cleaning or replacement without using special tools.
8. The sampler is capable of transport velocities of 927 ml per minute through ¼-inch tubing at a draw height of 10 feet using the ¼-inch ID pump.
9. An optional weighted sampling strainer of PVC or stainless steel is available.
10. A hermetically sealed 24-button keypad and a 2-line by 20-character alphanumeric backlit LCD linked to a programmable CPU are used.
11. The sampler is powered by:
 - a) The standard battery is a 12-volt, 7-amp-hour lead acid battery. A power port is available to recharge the sampler battery or to extend sampler operation from an external 12 VDC power source such as an appropriate auxiliary battery.
 - b) An optional 12-volt, 17-amp-hour lead acid battery, or,
 - c) An optional external 110/220 VAC Power Supply.
12. The sampler comes equipped with an external battery charger that can trickle charge the sampler battery while the sampler is operating. Use of a current-limiting dual-stage charger to prevent overcharging the sampler battery, diminishing its expected life, is recommended. The charger is:
 - a) Standard-output rapid/float 2-stage charger for 110/220 VAC operation, providing 12 VDC @ 750 mA, or
 - b) High-output rapid/float 2-stage charger for 110/220 VAC operation, providing 12 VDC @ 1.25 A.
13. No unique symbols or codes for programming or to indicate operating conditions are used. The software is menu driven, prompting input of requested information using the keypad. The display indicates each programming step. After entering data, the system automatically advances to the next programming step.
14. A password feature to restrict access to authorized persons is used.
15. A sampling program can be delayed by entering the number of hours and minutes for the sampler to count down, or the number of contact closures to occur. The delay is independent of the sampling interval.
16. The sampler purges the sample hose immediately prior to and following each sample. Purge duration is selectable.
17. The sampler has the capability to rinse the sample hose with source liquid prior to each sample when selected by the user.
18. If a sample is not obtained on the first attempt, the sampler immediately retries sample collection. If the sample still cannot be collected, the sampler omits that sample and continues the sequence.
19. The sampler is capable of manual sampling independent of a programmed sequence when initiated by a keystroke. It logs manual collections and is selectable to allow taking test samples:
 - a) Only when the sampler is not running a program,
 - b) During a program but the test sample is not counted as a sample, or
 - c) During a program and the test sample is counted as a sample.
20. In the time mode, the interval between samples is adjustable (1 – 5999 minutes in one-minute increments). In the flow mode, the sampler accepts and totalizes contact closures (1–9999), a 12 VDC pulsed input, or a 4–20-mA DC analog signal input for sampling at a user set point.
21. Sampler operating status is reviewed with minimal effort, and includes:
 - Program status
 - Current time
 - Time and date program started
 - Number of samples collected
 - Volume collected
 - Number of contact closures
 - Number off-line blockages
 - Minutes or flow signals remaining to the next sample
 - Number of samples remaining
 - Volume remaining
 - Time to override
22. All program settings are reviewed in addition to seeing the review of the completed program.
23. The sampler is a Manning Model PSB series.

Data Sheet PSB 02/18/08

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