EMERSON™

SFX150
Handheld Converter

Instruction Manual

Branson Ultrasonics Corp.
120 Park Ridge Road
Brookfield, CT 06804
(203) 796-0400
http://www.bransonultrasonics.com

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Chapter 1: SFX150 Handheld Converter

1.1   Handheld Converter Overview

The SFX150 Handheld Converter is ergonomically designed for comfort, and ease of use, to enable ultrasonic processing of up to 150 W at 40 kHz for quiet operation. The converter's recessed pushbutton provides assurance against unintended activation, while it's LED indicator provides visual feedback on the converter's operation, letting you know when ultrasonics are being delivered by illuminating during an ultrasonic cycle or by flashing on and off for System Error/Alarm conditions.

NOTICE	
ℹ	The Handheld Converter is only compatible with the SFX150 Sonifier power supply and SFX150 microtips.

NOTICE	
ℹ	SFX150 software version must be V1.3 or higher for proper handheld operation. If a previous version is installed, it must be upgraded before using the handheld converter.
	To check the software version, verify Register 1, see section *6.4 System Configuration Registers* in your Sonifier power supply instruction manual for information on accessing the configuration registers. See section *1.4 How to Contact Branson* in your Sonifier power supply instruction manual for information on getting your software upgraded.

Figure 1.1 Handheld Converter

Table 1.1 Handheld Converter

Item	Name	Description
1	Handheld Cable	Carries control and RF power signals.
2	LED Indicator	While illuminated, indicates that ultrasonic energy is being delivered to the converter. It also indicates that an Error/Alarm occurred when a flashing pattern is displayed.
3	Start Pushbutton	Starts an ultrasonics cycle and must be maintained during the complete cycle. If released before completing the ultrasonic cycle, ultrasonics will immediately stop.
4	Handheld Grip Area	The area intended for you to grasp the converter. **CAUTION** Avoid contact with metal surfaces as they may become hot during prolonged operation
5	SFX150 Replaceable Microtip	Provide the mechanical vibrations to your liquid sample. **CAUTION** Do not touch the horn or tip when ultrasonics are active. Touching the horn or tip while the unit is on can result in serious personal injury (frictional burn).
6	RF Connector	Connects the SFX150 power supply RF power signal output to the handheld converter.
7	D-sub Connector	Connects handheld I/O Control signals to the SFX150 power supply.

1.2   Handheld Converter Setup and Operation

NOTICE	
ℹ	The handheld converter is only compatible with microtips. See *Table C.1 Accessories* in your Sonifier power supply instruction manual for more information.

NOTICE	
ℹ	Microtips are operated at high material stress levels. For this reason Amplitude is automatically limited to 70% for Handheld converters to mitigate the possibility of failure. To override this limit, change Register 17 to 0. See section *6.4 System Configuration Registers* in your Sonifier power supply instruction manual for more information.

To set up and operate the handheld converter, take the following steps:

Table 1.2   Handheld Converter Setup and Operation

Item	Description
1	Ensure the Sonifier power supply is turned off.
2	Connect the microtip to the handheld converter: • Clean the contacting surfaces of the handheld converter and microtip, and remove any foreign matter from the threaded stud and threaded hole • Thread the handheld converter stud into the microtip and tighten, using wrenches. The recommended torque is 220 in·lb (24.85 N·m)
3	Connect the RF and D-sub cables to the Sonifier power supply as shown on Figure 1.2 Handheld Converter Setup.
4	Turn on the power supply.
5	Select your desired operation mode.
6	Perform an ultrasonic test as described on 1.3 Handheld Converter Ultrasonic Test.
7	Press the handheld converter pushbutton to start an ultrasonic cycle.

NOTICE	
ℹ	The RF Connector has a set screw which must be fastened in order to secure the connector using an Allen wrench, and loosened before removing the RF Connector.

Figure 1.2   Handheld Converter Setup

CAUTION	General Warning
⚠	Both the D-sub and RF connector must be connected and locked to ensure proper operation.

NOTICE	
ⓘ	In normal operation, the LED indicator will illuminate for the complete ultrasonic cycle. In pulsed sonic modes, the LED will remain on during both On and Off times.

NOTICE	
ⓘ	If an Alarm/Error occurs, the LED indicator will flash on and off to alert you. Review the error code shown on the display and consult section *7.4 Alarms/Errors* in your Sonifier power supply instruction manual for more information. Press the reset key to reset Alarms/Errors.

1.3 Handheld Converter Ultrasonic Test

The Test key on the front panel of the SFX150 power supply is used to verify that the unit is functioning (providing ultrasonic energy to the converter and microtip). The test key on the power supply must be held, and then the pushbutton on the handheld converter must be pressed for the system to perform an ultrasonic test.

Before testing the SFX150 system, always make sure that the microtip is not touching anything. The system also performs several self-tests when it is first turned on.

Table 1.3 Ultrasonic Test

Step	Do this…	To obtain this result
1	Set up the SFX150 system following the instructions in this manual. If no microtip is currently installed, mount the microtip to the handheld converter. See 1.2 Handheld Converter Setup and Operation for more information.	Prepare the SFX150 system to operate, if it was not previously assembled.
2	After you have connected the microtip to the handheld converter and verified all other connections are as indicated in *Chapter 5: Installation and Setup* in your Sonifier power supply instruction manual, turn on the unit and observe the self-test displays.	Verify that the system passes all its self-tests, observing that there are no error messages on the front panel display. The SFX150 system advances to the ready (rdy) mode and shows 'rdy' on the display (see section *2.2.1 Sonifier Power Supply Front Panel* on your Sonifier power supply instruction manual).
3	Adjust the Amplitude control to approximately 50% (observe the value on the front panel display). See *Chapter 6: Operation* in your Sonifier power supply instruction manual to adjust the amplitude.	Ensures that ultrasonic amplitude will be at a mid-range value, and will not cause damage if you were using a microtip (which must be used at less than 70%).
4	Verify that the microtip is not touching anything. Press and hold the test key on the front panel of the power supply, then press the handheld converter pushbutton. Observe the front panel display.	Verifies the ultrasonic output of the system. You may hear a soft, high-pitched sound. The display will show the output power value. The test will run for 2 seconds, then stop.
5	If no alarms occurred during the Test, you may either proceed with using the system or turn the unit off. If an error occurs, see section *7.4 Alarms/Errors* in your Sonifier power supply instruction manual for more information.	Verification that the SFX150 system is operating and is ready to be set up for your experiment or processing needs.

NOTICE

See section *7.3 Troubleshooting Chart* in your Sonifier power supply instruction manual if you have difficulties performing the above steps.

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