



DCX RM S Web Page

Operating Manual

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Manual Change Information

At Branson, we strive to maintain our position as the leader in ultrasonics plastics joining, metal welding, cleaning and related technologies by continually improving our circuits and components in our equipment. These improvements are incorporated as soon as they are developed and thoroughly tested.

Information concerning any improvements will be added to the appropriate technical documentation at its next revision and printing. Therefore, when requesting service assistance for specific units, note the Revision information found on the cover of this document, and refer to the printing date which appears on this page.

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ii 4000858 REV. 00



Foreword

Congratulations on your choice of a Branson Ultrasonics Corporation system!

The Branson DCX RM S Power Supply system is process equipment for the joining of plastic parts using ultrasonic energy. It is the newest generation of product using this sophisticated technology for a variety of customer applications. This Operating Manual is part of the documentation set for this system, and should be kept with the equipment.

Thank you for choosing Branson!

Introduction

This manual is arranged into several structured chapters which will help you find the information you may need to know to safely handle, install, set up, program, operate, and/or maintain this product. Please refer to the <u>Table of Contents</u> and/or the <u>Index</u> of this manual to find the information you may be looking for. In the event you require additional assistance or information, please contact our Product Support department (see <u>1.3 How to Contact Branson</u> for information on how to contact them) or your local Branson representative.

4000858 REV. 00 iii

iv 4000858 REV. 00

Table of Contents

Cnapte	er 1: Safety and Support
1.1	Safety Requirements and Warnings
1.2	General Precautions
1.3	How to Contact Branson 5
Chapte	er 2: The Web Page Interface
2.1	Introduction
2.2	Models Covered
Chapte	er 3: Connecting to the Web Page Interface
3.1	Locating the Ethernet Port
3.2	System Requirements
3.3	Point to Point Connection (Windows Vista and Windows 7)
3.4	Point to Point Connection (Windows XP)
Chapte	er 4: The Web Page Interface
4.1	Web Page Interface Overview
4.2	Login
4.3	IP Setup
4.4	Weld Preset
4.5	I/O Diagnostics
4.6	Seek & Weld Graphs
4.7	Horn Signature
4.8	System Information
4.9	Alarm Log

4000858 REV. 00 v

vi 4000858 REV. 00



List of Figures

Chapter 1	: Safety and Support	
Chapter 2	: The Web Page Interface	
-	: Connecting to the Web Page Interface	,
igure 3. i	DCX RM S Power Supply	_
Chapter 4	: The Web Page Interface	
igure 4.1	Web Page Interface Overview	2
igure 4.2	Login	23
igure 4.3	IP Setup Menu	2
igure 4.4	Weld Preset Menu	16
igure 4.5	I/O Diagnostics Menu	Ç
igure 4.6	Seek & Weld Graphs Menu	(
igure 4.7	Horn Signature Menu3	12
igure 4.8	System Information Menu	Z
igure 4.9	Alarm Log Menu	Ę

4000858 REV. 00 vii

viii 4000858 REV. 00



List of Tables

Chapter 1	: Safety and Support
Chapter 2	2: The Web Page Interface
Chapter 3	: Connecting to the Web Page Interface
Chapter 4	: The Web Page Interface
Table 4.1	Web Page Interface Overview
Table 4.2	IP Setup Menu Option
Table 4.3	Weld Preset Menu Option
Table 4.4	I/O Diagnostics Menu Option
Table 4.5	Seek & Weld Graphs Menu Option
Table 4.6	Horn Signature Menu Option
Table 4.7	System Information Menu Option
Table 4.8	Alarm Log Menu Option

4000858 REV. 00 ix



Chapter 1: Safety and Support

1.1	Safety Requirements and Warnings	2
1.2	General Precautions	3
1.3	How to Contact Branson	5

1.1 Safety Requirements and Warnings

This chapter contains an explanation of the different safety notice symbols and icons found in this manual and provides additional safety information for ultrasonic welding. This chapter also describes how to contact Branson for assistance.

1.1.1 Symbols Found in this Manual

These symbols used throughout this manual warrant special attention:

WARNING	Indicates a possible danger
	If these risks are not avoided, death or severe injury might result.

CAUTION	Indicates a possible danger
<u>^</u>	If these risks are not avoided, slight or minor injury might result.

NOTICE	Indicates a possible damaging situation
1	If this situation is not avoided, the system or something in its vicinity might get damaged. Application types and other important or useful information are emphasized.

1.2 General Precautions

Take the following precautions before servicing the power supply:

- Be sure the power is disconnected before making any electrical connections
- To prevent the possibility of an electrical shock, always plug the power supply into a grounded power source
- Power supplies produce high voltage. Before working on the power supply assembly, do the following:

Turn off the power supply

Unplug main power

Allow at least 5 minutes for capacitors to discharge

- · High voltage is present in the power supply. Do not operate with the cover removed
- High line voltages exist in the ultrasonic power supply assembly. Common points are tied to circuit reference, not chassis ground. Therefore, use only non-grounded, battery-powered multimeters when testing the power supply assembly. Using other types of test equipment can present a shock hazard
- Keep hands from under the horn. Down force (pressure) and ultrasonic vibrations can cause injury
- Do not cycle the welding system if either the RF cable or converter is disconnected
- When using larger horns, avoid situations where fingers could be pinched between the horn and the fixture

CAUTION	Loud Noise Hazard
	Sound level and frequency of the noise emitted during the ultrasonic assembly process may depend upon a. type of application, b. size, shape and composition of the material being assembled, c. shape and material of the holding fixture, d. welder setup parameters and e. tool design.
	Some parts vibrate at an audible frequency during the process. Some or all of these factors may result in an uncomfortable noise being emitted during the process.
	In such cases operators may need to be provided with personal protective equipment. See 29 CFR (Code of Federal Regulations) 1910.95 Occupational Noise Exposure

1.2.1 Intended Use of the System

The DCX Power Supply and components are designed to be used as part of an ultrasonic welding system. These are designed for a wide variety of welding or processing applications.

The system can be used to perform ultrasonic welding, inserting, staking, spot welding, swaging, degating, and continuous ultrasonic operations. It is designed for automated, semi-automated and/or manual production operations.

1.2.2 Emissions

When being processed, certain plastic materials can emit toxic fumes, gases or other emissions that can be hazardous to the operator's health. Where such materials are processed, proper ventilation of the workstation is required. Check your materials suppliers for recommended protection when processing their materials.

CAUTION	Corrosive Material Hazard
	Processing of many materials, such as PVC, can be hazardous to an operator's health and could cause corrosion/damage to the equipment. Use proper ventilation and take protective measures.



1.3 How to Contact Branson

For additional assistance, please refer to the DCX RM S Power Supply Instruction Manual.

Chapter 2: The Web Page Interface

2.1	Introduction
2.2	Models Covered9

2.1 Introduction

The DCX RM S Web Page Interface provides access, via Ethernet connection, to web pages containing power supply information, diagnostics tools, and configuration options. Communication can be established point-to-point or through a local area network. On the web page interface you can access:

- <u>4.3 IP Setup</u>
- 4.4 Weld Preset
- 4.5 I/O Diagnostics
- 4.6 Seek & Weld Graphs
- 4.7 Horn Signature
- <u>4.8 System Information</u>
- 4.9 Alarm Log



2.2 Models Covered

This manual applies to the web page interface of the DCX RM S power supply.

2.2.1 DCX RM S Power Supply Manual Set

The following documentation is available in electronic format for the DCX RM S power supply:

• DCX RM S Power Supply Instruction Manual

Chapter 3: Connecting to the Web PageInterface

3.1	Locating the Ethernet Port
3.2	System Requirements13
3.3	Point to Point Connection (Windows Vista and Windows 7) 14
3.4	Point to Point Connection (Windows XP)17

3.1 Locating the Ethernet Port

3.1.1 DCX RM S Ethernet Port Location

Figure 3.1 DCX RM S Power Supply



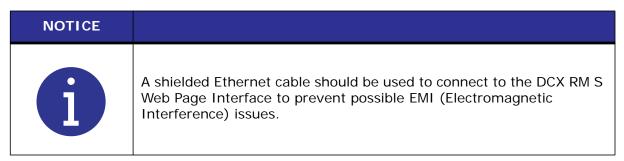


3.2 System Requirements

To connect to the DCX RM S Web Page Interface you will need a PC running a Windows® operating system with an Internet Explorer® * web browser software (versions 8 and up).

*Windows, and Internet Explorer are registered trademarks of Microsoft Corporation.

NOTICE	
1	The DCX RM S power supply is not compatible with network scanning software. If your local network uses these types of programs, the DCX RM S IP address must be placed in an exclusion list.

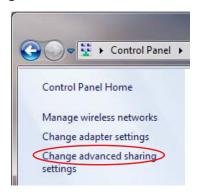


3.3 Point to Point Connection (Windows Vista and Windows 7)

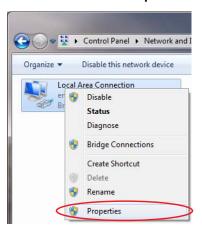
To connect directly to the DCX RM S Web Page Interface using a PC with Windows Vista®* or Windows 7®* operating system, complete the following steps:

*Windows Vista and Windows 7 are registered trademarks of Microsoft Corporation.

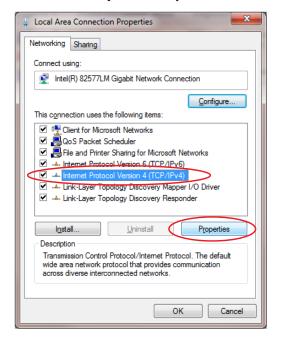
- 1. Connect the power supply to a computer via the Ethernet port
- 2. Turn on the power supply
- 3. On your PC, click on the Windows logo on the task bar and select Control Panel
- 4. Select View Large I cons on the top right corner
- 5. Select Network and Sharing Center
- 6. Select Change adapter settings



7. Right click on Local Area Connection and select Properties to bring up the Networking tab

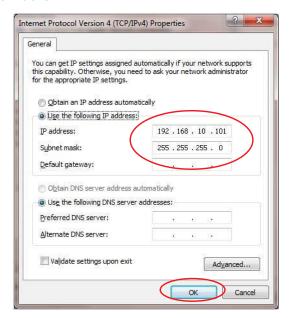


8. Highlight Internet Protocol Version 4 (TCP/IPv4) from the list and click on Properties



9. Use the following IP address:

IP address: 192.168.10.101 Subnet mask: 255.255.255.0



- 10.Click **OK**. Close the rest of the dialog boxes
- 11. Open the Internet Explorer web browser (version 8 and up)
- 12.In the address bar type the following address: http://192.168.10.100. Press Enter

13. This will bring up the DCX RM S Web Page Interface



14.Enter a user ID number (any number up to 9 digits long)



3.4 Point to Point Connection (Windows XP)

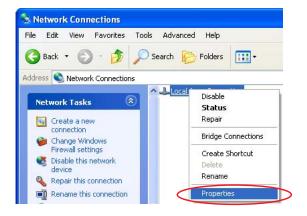
To connect directly to the DCX RM S Web Page Interface using a PC with Windows XP®* operating system, complete the following steps:

*Windows XP is a registered trademark of Microsoft Corporation.

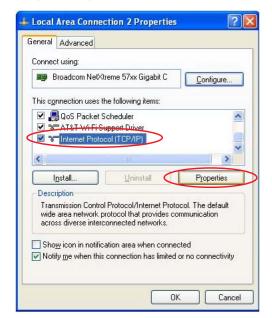
- 1. Connect the power supply to a computer via the Ethernet port
- 2. Turn on the power supply
- 3. On your PC, select Start > Control Panel
- 4. Select Switch to Classic View on the top left corner



- 5. Select Network Connections
- 6. Right click on Local Area Connection and select Properties to bring up the General tab

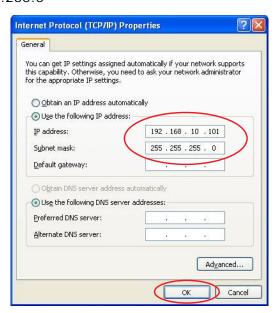


7. Highlight Internet Protocol (TCP/IP) from the list and click on Properties



8. Use the following IP address:

IP address: 192.168.10.101 Subnet mask: 255.255.255.0



9. Click **OK**. Close the rest of the dialog boxes

10. Open the Internet Explorer web browser (version 8 and up)

11.In the address bar type the following address: http://192.168.10.100. Press **Enter**

12. This will bring up the DCX RM S Web Page Interface



13.Enter a user ID number (any number up to 9 digits long)



Chapter 4: The Web Page Interface

4.1	Web Page Interface Overview	22
4.2	Login	23
4.3	IP Setup	24
4.4	Weld Preset	26
4.5	I/O Diagnostics	29
4.6	Seek & Weld Graphs	30
4.7	Horn Signature	32
4.8	System Information	34
4.9	Alarm Log	35

4.1 Web Page Interface Overview

The DCX RM S Web Page Interface allows you to set a weld preset, diagnose and configure the power supply I/O, perform horn scans and seeks, view system information, and to view and download the system alarms, history and events logs.

Figure 4.1 Web Page Interface Overview

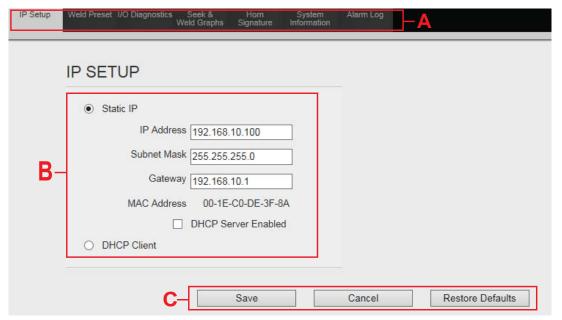


Table 4.1 Web Page Interface Overview

Item	Name	Description
		The menu navigation tabs are always displayed on the upper section of the web pages. They provide access to the following menu options:
	Menu	4.3 IP Setup 4.4 Wold Procest
Α	Navigation	4.4 Weld Preset
	Tabs	4.5 I/O Diagnostics 4.6 Seek & Weld Graphs
		4.7 Horn Signature
		4.8 System Information
		4.9 Alarm Log
В	Menu Display	Displays the contents of the currently selected menu option.
С	Command Buttons	Different command buttons allow to save settings, cancel changes, restore default settings, and to perform other functions specific to each menu.
		Save, Cancel, and Restore Defaults is page specific. They only operate on the page displayed.

4.2 Login

When connection is established with the DCX RM S Web Page Interface, the Login page will display. Enter a unique user ID number. The user ID is numeric only and up to 9 digits long. This number allows for keeping track of user access.

Figure 4.2 Login



4.3 IP Setup

Use this menu to setup the DCX RM S power supply's network settings. DCX RM S power supply's default IP setting is Static IP with the address shown in the figure below.

Figure 4.3 IP Setup Menu

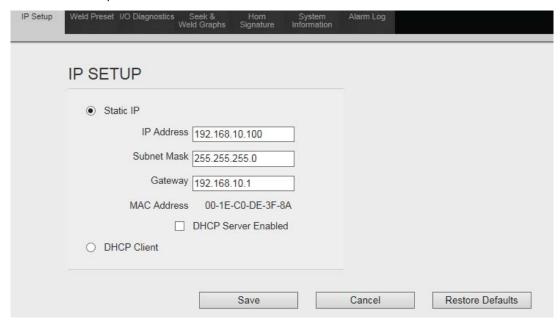


Table 4.2 IP Setup Menu Option

Name	Description
IP SETUP	
Static IP	Select this option to manually assign an IP address to the DCX RM S power supply. The DCX RM S power supply will alert if an invalid IP address setting is entered.
IP Address	The IP address assigned to the DCX RM S power supply.
Subnet Mask	The mask used to determine to what subnet the DCX RM S power supply's address belongs to.
Gateway	The gateway address assigned to the network for communication with other computers or networks.
MAC Address	Displays the MAC address assigned to the DCX RM S power supply.
DHCP Server Enabled	Select this option to have DCX RM S power supply assign IP addresses to any devices connected to it. This facilitates connecting a computer or laptop point to point (P2P) with the DCX RM S power supply. NOTICE
	Connecting a DCX RM S power supply with DHCP server enabled to a network which already has a device working as a DHCP server will cause connectivity problems.

Table 4.2 IP Setup Menu Option

Name	Description
DHCP Client	Select this option to have the DCX RM S power supply automatically request an IP address from a DCHP Server. The IP address will be grayed out.

NOTICE	
1	All changes on this menu take effect on the next power-up.

At any time you may determine the DCX RM S power supply's IP address by going through the associated registers using the front panel LCD. A Cold Start can also be performed to take your power supply back to it's factory default IP address. For details on navigating the DCX RM S registers or performing a Cold Start, consult your power supply manual.

NOTICE	
1	Beware that other settings will also be reset to their defaults when a Cold Start is executed.

4.4 Weld Preset

Use this menu to set weld parameters, seek options, and power-up actions. Use the command buttons on the bottom to save settings, cancel changes, or to restore to factory default settings.

Figure 4.4 Weld Preset Menu

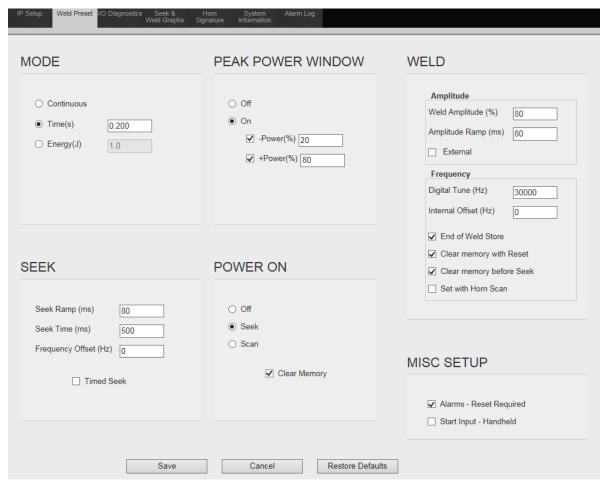


 Table 4.3
 Weld Preset Menu Option

Name	Description		
Mode			
Continuous	Weld mode changes to Continuous after pressing save button.		
Time (s)	Weld mode changes to Time after pressing save button.		
Energy (J)	Weld mode changes to Energy after pressing save button.		
Peak Power Window			
Off	Select this option to disable power window limits.		
On	Select this option to enable power window limits.		

 Table 4.3
 Weld Preset Menu Option

Name	Description
-Power (%)	Set the desired power window limit low value.
	NOTICE Power window limits must be set in multiples of 5.
	Set the desired power window limit high value.
+Power (%)	Power window limits must be set in multiples of 5.
Amplitude	
Weld Amplitude (%)	The amplitude of ultrasonic energy that will be delivered by the DCX RM S power supply. Valid range is between 10 to 100 (10% to 100% amplitude).
Amplitude Ramp (ms)	The time it takes for the amplitude to ramp up to 100% when the External Start signal is applied. If amplitude setting is lower than 100%, ramp time will be adjusted accordingly.
External	Select the External check box to control the amplitude using an analog input from the user I/O connector.
Frequency	
Digital Tune (Hz)	Starting frequency set from horn signature or manually entered.
Internal Offset (Hz)	Sets the frequency offset from the Web Page as either a positive or negative value offset from digital tune.
End of Weld Store	Select to save the frequency at the end of the weld as the starting frequency for the following weld.
Clear memory with Reset	Select to clear memory with reset. Memory offset will be set to 0 when a Reset is applied. Reset can come from external I/O, front panel, or web page interface (seek or horn scan).
Clear Memory before Seek	Select to clear memory before seek. Memory offset will be set to 0 before Seek is applied.
Set with Horn Scan	Select to set Digital Tune frequency with a successfully completed horn scan.
Seek	
Seek Ramp (ms)	The time it will take the power supply to ramp-up when performing a seek.
Seek Time (ms)	The duration of a seek.
Frequency Offset (Hz)	The frequency offset applied to the power supply operating frequency.
Timed Seek	Select this check box to have the power supply perform a seek every 60 seconds. Seeks will be timed from the moment sonics was last activated.
Power On	
Off	Select this option to disable power-on actions.

 Table 4.3
 Weld Preset Menu Option

Name	Description
Seek	Select this option to have the power supply perform a seek on power-up.
Scan	Select this option to have the power supply perform a horn scan on power-up.
Misc Setup	
Alarms - Reset Required	This option determines if the alarm is latched or not. Latched alarms require a reset before another cycle can start.
Start Input - Handheld	If this option is selected, the user must maintain the start input signal throughout the duration of the weld cycle. If the start input is released during a cycle, then the cycle is aborted.

4.5 I/O Diagnostics

Use this menu to monitor and control the DCX RM S power supply digital and analog I/O.

Figure 4.5 I/O Diagnostics Menu

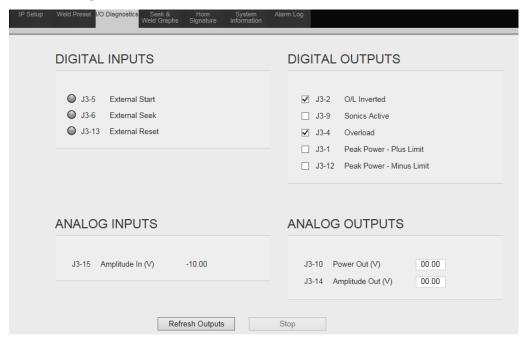


Table 4.4 I/O Diagnostics Menu Option

Name	Description		
Digital Inputs			
J3-5 External Start	Indicate if the digital inputs are active.		
J3-6 External Seek			
J3-13 External Reset			
Digital Outputs			
J3-2 O/L Inverted			
J3-9 Sonics Active	Select/clear check boxes to toggle available digital outputs on/off.		
J3-4 Overload			
J3-1 Peak Power - Plus Limit			
J3-12 Peak Power - Minus Limit			
Analog Inputs			
J3-15 Amplitude In (V)	Displays the current analog input values.		
Analog Outputs			
J3-10 Power Out (V)	Allows control of analog output values.		
J3-14 Amplitude Out (V)			

4.6 Seek & Weld Graphs

Use this menu to test your system. This feature allows you to capture 5 seconds of welding data which you can both view and export. The weld data graph is provided with 6 available parameters: Amplitude, Power, Phase, PWM Amplitude, Current, and Frequency. Each parameter has a checkbox to the left of its name.

Only checked parameters will be displayed. While in this menu, if the Weld is being run from external I/O or the custom LCD, the graph can be also displayed on the screen by using the "Update Graph" button.

Figure 4.6 Seek & Weld Graphs Menu

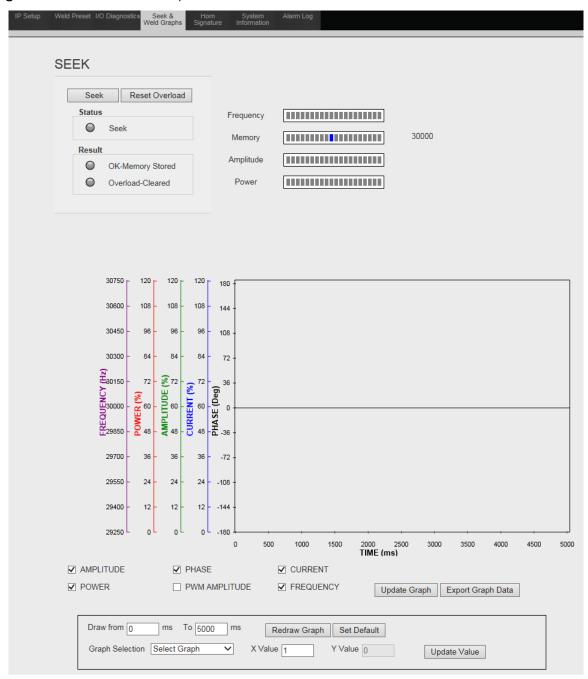


 Table 4.5
 Seek & Weld Graphs Menu Option

Name	Description
Seek	
Seek	Click to perform a seek cycle.
Reset Overload	Click to reset an overload condition.
OK - Memory Stored	Indicates that the horn operating frequency was stored in the DCX RM S power supply memory.
Overload - Cleared	Indicates that test resulted in an overload and the memory has been cleared.
Frequency	Monitors the horn operating frequency.
Memory	Displays the frequency stored in the DCX RM S power supply memory.
Amplitude	Displays the percentage of converter amplitude.
Power	Displays the percentage of power output.
Update Graph	Click to get the value of all the parameter and draw the graph for Phase, Current, Amplitude, Power, and Frequency parameters vs Time on the Y axis.
Export Graph Data	Click to export the Weld Graph data with Weld Preset settings to CSV file.
Draw from to	Select the <i>from</i> and <i>to</i> time values to zoom into the desired graph region.
Redraw Graph	Click to redraw the same graph with those parameters which are checked with the Time parameter on Y axis.
Set Default	Click to return the sample rate, start time, end time and graph selection to default settings.
Graph Selection	Select a parameter and enter a particular X time value to obtain the corresponding Y value at that particular time.
Update Value	Click to update the Y value for the given graph selection.

4.7 Horn Signature

Use this menu to diagnose your ultrasonic horn. When performing a horn scan, ideally, there will be only one resonant frequency. The Horn Signature graph is provided with 3 available parameters: Phase, Current, and Amplitude. The horn Signature Graph can be both viewed and exported.

Each parameter has a checkbox to the left of its name. Only checked parameters will be displayed.

Figure 4.7 Horn Signature Menu

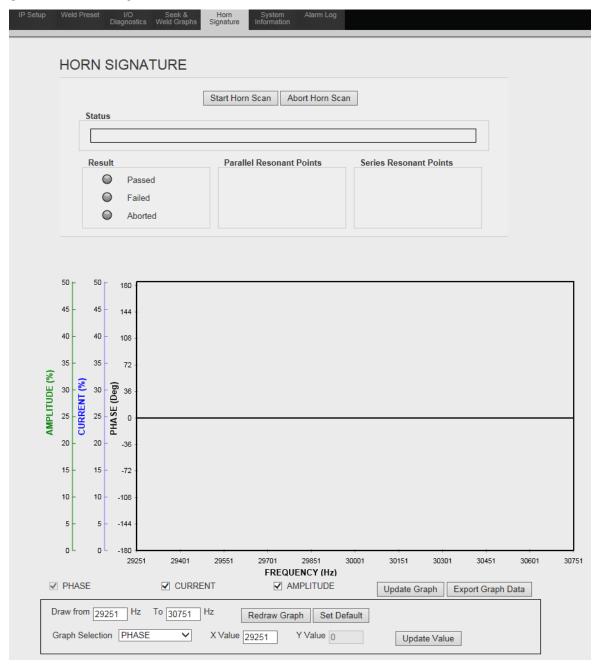


 Table 4.6
 Horn Signature Menu Option

Name	Description
Horn Signature	
Start Horn Scan	Click to initiate the horn scan.
Abort Horn Scan	Click to abort the horn scan.
Status	Indicates the horn scan progress.
Result	Indicates if the horn scan passed, failed, or if the operation was aborted.
Parallel Resonant Points	Displays the parallel resonant frequencies of the ultrasonic horn. The parallel resonant frequency is the operating frequency of the ultrasonic stack.
	If multiple parallel frequencies are found, they will all be listed. The frequency at which the ultrasonic stack is running will be displayed in blue.
Series Resonant Points	Displays the series resonant frequencies of the ultrasonic horn.
Update Graph	Click to draw the graph of the last horn scan.
Export Graph Data	Click to export the Weld Graph data with Weld Preset settings to CSV file.
Draw from to	Select the <i>from</i> and <i>to</i> time values to zoom into the desired graph region.
Redraw Graph	Click to redraw the same graph with those parameters which are checked with the Time parameter on Y axis.
Set Default	Click to return the sample rate, start time, end time and graph selection to default settings.
Graph Selection	Select a parameter and enter a particular X time value to obtain the corresponding Y value at that particular time.
Update Value	Click to update the Y value for the given graph selection.



4.8 System Information

Use this menu to view information about your DCX RM S power supply. Have the information on this screen available when calling Branson for troubleshooting help.

Figure 4.8 System Information Menu

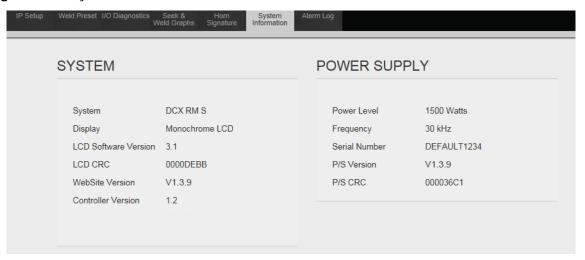


Table 4.7 System Information Menu Option

Name	Description	
System		
System	Displays the DCX RM S power supply model name.	
Display	Displays the type of front panel user interface on the DCX RM S power supply.	
LCD Software Version	Displays the LCD software version number.	
LCD CRC	Displays the CRC code of the LCD software.	
WebSite Version	Displays the Web Page version number.	
Controller Version	Displays the controller version.	
Power Supply		
Power Level	Displays the power supply wattage.	
Frequency	Displays the power supply operating frequency.	
Serial Number	Displays the power supply serial number.	
P/S Version	Displays the power supply software version number.	
CRC	Displays the CRC code of the power supply controller software.	

4.9 Alarm Log

Use this screen to view the DCX RM S power supply alarm history. The alarms can be sorted by alarm number or alarm type. Alarms can be exported to an Excel file.

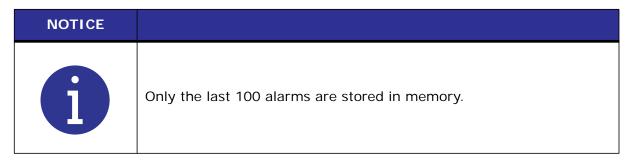


Figure 4.9 Alarm Log Menu

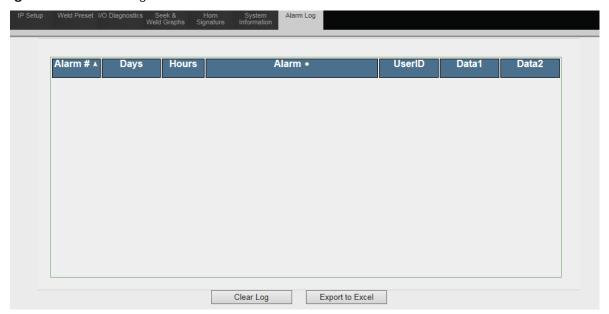


Table 4.8Alarm Log Menu Option

Name	Description
Alarm #	A unique alarm identification number.
Days	The DCX RM S power supply units do not feature an integrated real time clock. Alarm date and time account for the power-on hours from the moment the DCX RM S power supply was first turned on.
Hours	
Alarm	Displays a brief alarm description.
UserID	The ID number of the user logged in at when the alarm occurred. Will display zero if the alarm occurs from an external weld.
Data1	For future use.
Data2	

Table 4.8 Alarm Log Menu Option

Name	Description
Command Buttons	
Clear Log	Click to clear the alarm log.
Export to Excel	Click to download an Excel spreadsheet file of the alarm log.

Index

Symbols

+Power (%) 27

Α

Abort Horn Scan 33
Alarm 35
Alarm # 35
Alarm Log 35
Alarms - Reset Required 28
Amplitude 27, 31
Amplitude Ramp (ms) 27
Analog Inputs 29
Analog Outputs 29

C

Clear Log 35 Clear Memory before Seek 27 Clear memory with Reset 27 Command Buttons 22, 35 Contact Branson 5 Continuous 26 Controller Version 34 CRC 34

D

Data1 35
Data2 35
Days 35
DHCP Client 25
DHCP Server Enabled 24
Digital Inputs 29
Digital Outputs 29
Digital Tune (Hz) 27
Display 34
Draw from... to... 31, 33

Ε

Emissions 4
End of Weld Store 27
Energy (J) 26
Ethernet Port 12
Export Graph Data 31, 33
Export to Excel 35
External 27

F

Frequency 27, 31, 34

Frequency Offset (Hz) 27

G Gateway 24 **General Precautions 3** Graph Selection 31, 33 Н Horn Signature 32, 33 Hours 35 I/O Diagnostics 29 Intended Use of the System 4 Internal Offset (Hz) 27 Introduction 8 IP Address 24 IP Setup 24 J3-1 Peak Power - Plus Limit 29 J3-10 Power Out (V) 29 J3-12 Peak Power - Minus Limit 29 J3-13 External Reset 29 J3-14 Amplitude Out (V) 29 J3-15 Amplitude In (V) 29 J3-2 O/L Inverted 29 J3-4 Overload 29 J3-5 External Start 29 J3-6 External Seek 29 J3-9 Sonics Active 29 L LCD CRC 34 LCD Software Version 34 Login 23 M MAC Address 24 Memory 31 Menu Display 22 Menu Navigation Tabs 22 Misc Setup 28 Mode 26 Models Covered 9 0 Off 26, 27 OK - Memory Stored 31 On 26 Overload - Cleared 31

Ρ

P/S Version 34

Parallel Resonant Points 33
Peak Power Window 26
Point to Point Connection 14
Power 31
-Power (%) 27
Power Level 34
Power On 27
Power Supply 34

R

Reset Overload 31 Result 33

S

Safety and Support 1 Safety Requirements 2 Scan 28 Seek 27, 28, 31 Seek & Weld Graphs 30 Seek Ramp (ms) 27 Seek Time (ms) 27 Serial Number 34 Series Resonant Points 33 Set Default 31, 33 Start Horn Scan 33 Static IP 24 Status 33 Subnet Mask 24 Symbols 2 System 34 System Information 34 System Requirements 13

T

Time (s) 26 Timed Seek 27

U

Update Graph 31, 33 Update Value 31, 33 UserID 35

W

Warnings 2 Web Page Interface 22 WebSite Version 34 Weld Amplitude (%) 27 Weld Preset 26