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Power Conversion Solutions - Distribution - D.C. Power Supplies



E19042A Regulator Board

Subject

<u>Introduction</u>	3
1 <u>Description</u>	3
1.1 Functionality	3
1.2 Inspection	3
2 <u>Drawings</u>	3
2.1 Block Diagram	3
3 <u>Switches & Terminal Blocks</u>	
3.1 Dip Switches	4
3.2 Terminal Blocks	5
3.3 Status LED's	6
4 <u>Configuration & Set Up</u>	6
4.1 Setting Maximum Voltage Limit	6
4.2 Setting Maximum Current Limit	6
4.3 Setting DC Overload	6
4.4 Setting Bias Potentiometers	6

Prep. By	AM		Darrah Electric Co.
		Part Number	****
Date	1-16-14	Doc Number	E19042A
Rev	A	Sheet	Page 2 of 6

Introduction

The following instructions refer to the operation and configuration of the Darrah E19042A Regulator Board used in DC Power Supplies.

The instructions do not purport to cover all details or variations in Equipment, or to provide for every possible contingency to be met in connection with operation or maintenance. Should further information be desired or should particular problem arise which are not covered sufficiently for the user's purpose, the matter should be referred to Darrah Electric.

1. Description:

1.1 **Functionality**

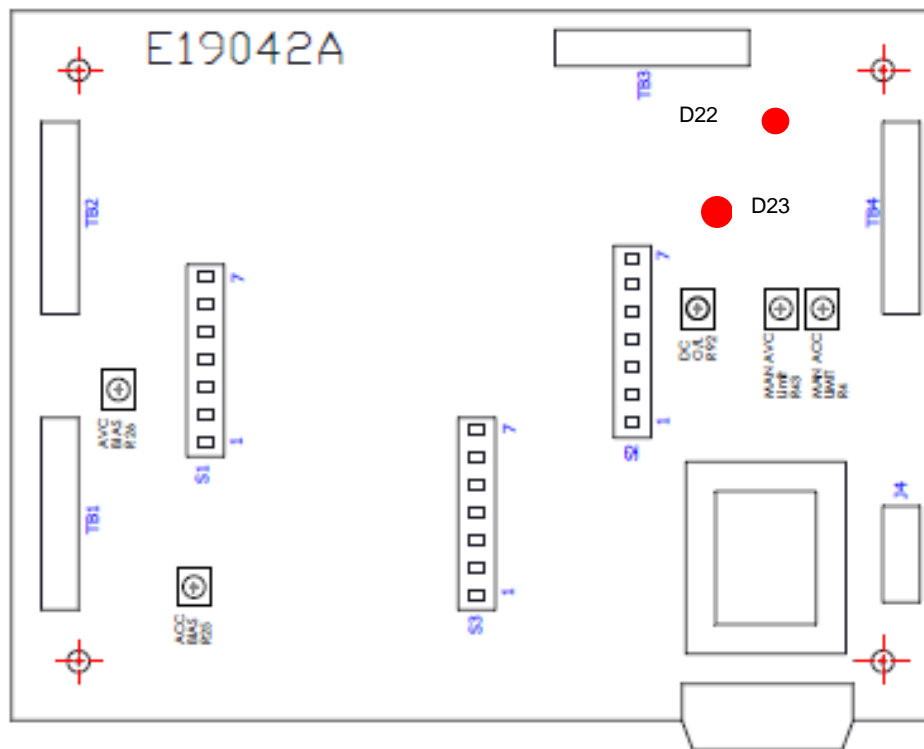
The Regulator Board is designed to regulate DC Power in either Voltage mode (with or without current limit) or Current mode (with or without voltage limit). Maximum limits are set by adjusting onboard potentiometers R4 and R43.


1.2 **Inspection**

Prior to applying power to the board, conduct a visual inspection. As there are a number of different methods of connection, refer to the wiring diagram for the specific Power Supply to verify those connections.

2. Drawings

2.1 **Block Diagram**



Prep. By	AM	 Darrah Electric Co.	
		Part Number	****
Date	1-16-14	Doc Number	E19042A
Rev	A	Sheet	Page 3 of 6

3. Configuration

3.1 Dip Switches

S1. Closing the Dip Switches introduces Capacitance into the circuit to stabilize the output. Only utilize enough capacitance to make output stable. Any combination of switch positions 2-6 can be used.

Pos 1 – Current feedback reference signal (ALWAYS CLOSED) unless isolated external current feedback signal is utilized.

Pos 2 – Closing adds 33uF capacitor to integrator (Open or Closed as needed for output stability)

Pos 3 – Closing adds 47uF capacitor to integrator (Open or Closed as needed for output stability)

Pos 4 – Closing adds 68uF capacitor to integrator (Open or Closed as needed for output stability)

Pos 5 – Closing adds 100uF capacitor to integrator (Open or Closed as needed for output stability)

Pos 6 – Closing adds 220uF capacitor to integrator (Open or Closed as needed for output stability)

Pos 7 – N.C.

S2.

Pos 1 – VF1 Potentiometer_Manual (Closed)

Pos 2 – AF1 Potentiometer_Manual (Closed)

Pos 3 – Closed_Fixed Short Ramp/Open_External RH1,RH2

Pos 4 – 3.3µfd Ramp timing capacitor (closed if needed) If external ramp control is used.

Pos 5 – 2.2µfd Ramp timing capacitor (closed if needed) If external ramp control is used.

Pos 6 - N.C.

Pos 7 – N.C.

S3. S3 used only when interfacing with E19043 Metering and PLC Interface board.

Pos 1 – VCC Select

Pos 2 – ACC Select

Pos 3 – Voltage Potentiometer Select


Pos 4 – Current Potentiometer Select

Pos 5 – Closure_-9.6V Target select

Open_Remote target select

Pos 6 - N.C.

Pos 7 – N.C.

Prep. By	AM		Darrah Electric Co.
		Part Number	****
Date	1-16-14	Doc Number	E19042A
Rev	A	Sheet	Page 4 of 6

3.2 Terminal Blocks

TB1.

Pos 1 – OUT
 Pos 2 – COM
 Pos 3 – I-IN
 Pos 4 – COM
 Pos 5 – AF1
 Pos 6 – IREF1
 Pos 7 – SH-
 Pos 8 – SH+

TB2.

Pos 1 – HOLD
 Pos 2 – RESET
 Pos 3 – RH1
 Pos 4 – RH2
 Pos 5 – TARGET
 Pos 6 – RESULT
 Pos 7 – VREF2
 Pos 8 – IREF2


TB4. DC O/L

Pos 1 – N/C
 Pos 2 – COM
 Pos 3 – N/O
 Pos 4 – N/C
 Pos 5 – COM
 Pos 6 – +V
 Pos 7 – COM
 Pos 8 – -V

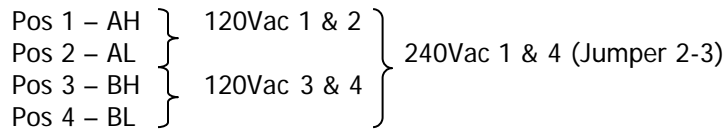
} External Relay contact input

J1. Ribbon Connector

Pos 1 – } 120Vac 1 & 2
 Pos 2 – }
 Pos 3 – } 120Vac 3 & 4
 Pos 4 – }
 Pos 5 – NO CONN
 Pos 6 – NO CONN
 Pos 7 – COM (Tied to Neg DC)
 Pos 8 – COM (Tied to Neg DC)
 Pos 9 - +9.6V
 Pos 10 - -9.6V
 Pos 11 – Volt
 Pos 12 – AMP
 Pos 13 – VCC
 Pos 14 - ACC

Prep. By	AM		Darrah Electric Co.
		Part Number	****
Date	1-16-14	Doc Number	E19042A
Rev	A	Sheet	Page 5 of 6

J4.



3.3 Status LED's

D23 is illuminated when power is applied to the board. (+9.6 VDC available)
D22 is illuminated until an output overload is detected.

4 Configuration & Set Up (Onboard potentiometers)

4.1 Setting Maximum Output Voltage Level (R43)

Due to compensation built into the main transformer, it may be necessary to limit the maximum output voltage the unit will produce. R43 in the fully counterclockwise position will allow the unit to produce maximum output voltage. If a voltage limit is desired, set R43 to roughly the center position. While monitoring the power supply's output voltage, start the unit and set the external voltage control to maximum position (fully clockwise). Turn R43 counterclockwise until desired maximum output voltage is obtained. Check that maximum desired output voltage can be obtained at full load.

4.2 Setting Maximum Output Current level (R4) Maximum load + at least 15-20% must be available.

R4 in the fully counterclockwise position will allow the unit to produce maximum output current. If a current limit is desired, set R4 to roughly the center position. While monitoring the power supply's output current, start the unit and set the external current control to maximum position (fully clockwise). Turn R4 counterclockwise until desired maximum output current is obtained.


4.3 Setting DC Overload (R92) Maximum load + at least 10% must be available.

R92 in the fully clockwise position will not produce an overload trip. To set an overload trip, start unit and apply 110% load. Slowly Turn R92 counterclockwise. D22 will extinguish when trip point is set.

Note: If DC overload is used to trip unit offline, (using relay contacts on TB4, terminals 1,2,3) all power will be lost and all status indicators will be extinguished.

4.4 Setting Bias Potentiometers R25, R26

R25 and R26 need not be adjusted unless this board is used with the E19043 Metering and PLC Interface board. These are for setting a zero dc offset for voltage and current when the unit is controlled by a PLC.

Prep. By	AM		Darrah Electric Co.
		Part Number	****
Date	1-16-14	Doc Number	E19042A
Rev	A	Sheet	Page 6 of 6