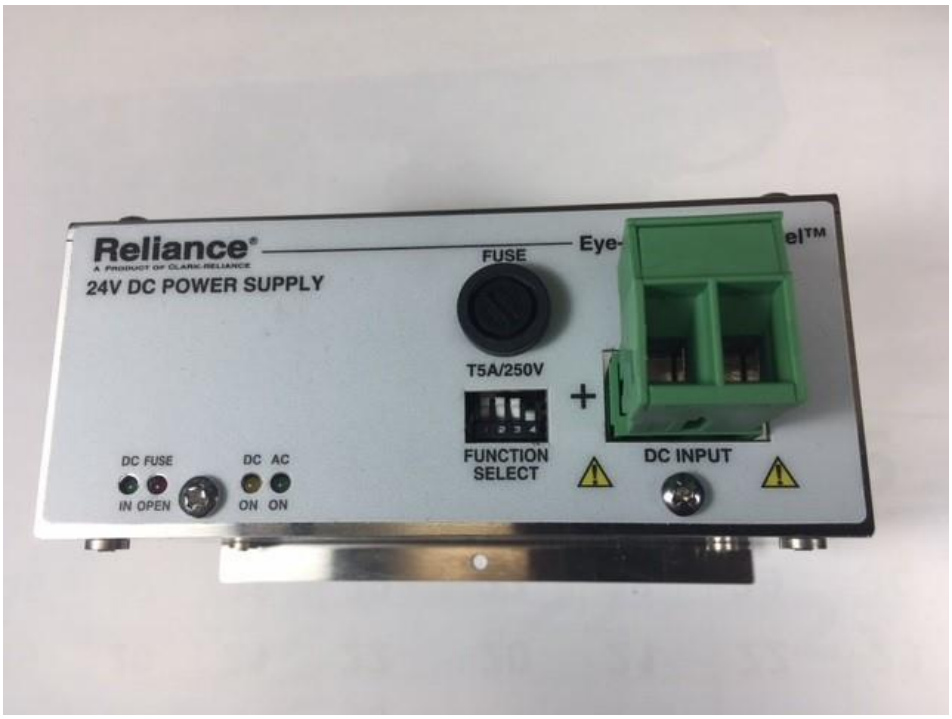
SmartLevel™ RSLC91 24VDC Power Supply



Reliance®
A PRODUCT OF CLARK-RELIANCE

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STORAGE and HANDLING

The Reliance® SmartLevel™ RSLC91 24VDC Power Supply meets or exceeds all applicable specifications when shipped from the factor. All parts must be inspected upon receipt to ensure that no damage has been incurred during transit. If damage has occurred, a claim should be filed with the carrier immediately.

GENERAL INSTALLATION

CAUTION: **Before installation or any servicing inside a SmartLevel system enclosure, mains power should be removed from the system and appropriately locked-out at the external source! Also verify that any electrically connected control instrumentation, if any, is properly set or bypassed! All installation steps should be performed by a qualified technician and should be executed in accordance with all applicable national and local codes. Read the entire IOM before proceeding.**

ALL configurations of the RESC-XX SmartLevel systems MUST BE properly EARTH GROUNDED on the grounding stud on the lower right corner of the RSLC13 Motherboard mounting panel assembly to ensure safety. See FIGURE 1.

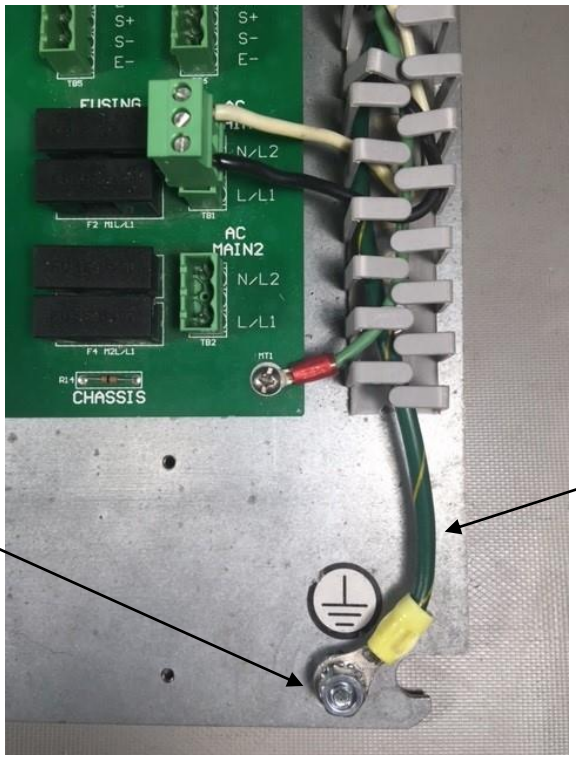

FIGURE 1 – Earth Grounding

CONFIGURATIONS

CAUTION: **The RSLC91 24VDC power supply can be installed by itself in a STANDALONE Configuration, with a second RSLC91 as backup, OR it can be used in conjunction with an RSLC25 Universal AC power supply as a backup battery operated power supply, to operate the system during an AC power failure, in an AC/DC configuration. Installations between the (2) configurations have different requirements and are individually explained.**

FEATURES

The RSLC91 24VDC Power Supply option allows the SmartLevel system to be powered when a traditional, non-AC grid is not available or isn't 100% reliable. It can be connected to either a 24VDC power supply or to a series/parallel combination of batteries supplying 24VDC, both capable of supplying the necessary current. Note that the RSLC91 24VDC power supply can be easily connected and powered by (2) 12VDC vehicle batteries in series, see FIGURE 1.

The RSLC91 can operate standalone by itself, with a second RSLC91 as a backup, or can be used in combination with an RSLC25 Universal AC Power Supply. When used in combination with an RSLC25 AC power supply, the AC supply is the primary power supply. When the RSLC91 24VDC power supply is ENABLED, a loss of AC mains power will automatically switch over to the RSLC91 24VDC power supply. If and when the AC power is restored, the RSLC91 24VDC power supply relinquishes control, allowing the RSLC25 AC power supply to take back over. LED Status indicators on the front panel show when a 24VDC power source had been applied, if the fuse on its front panel has blown, and what power supply the system is running on.

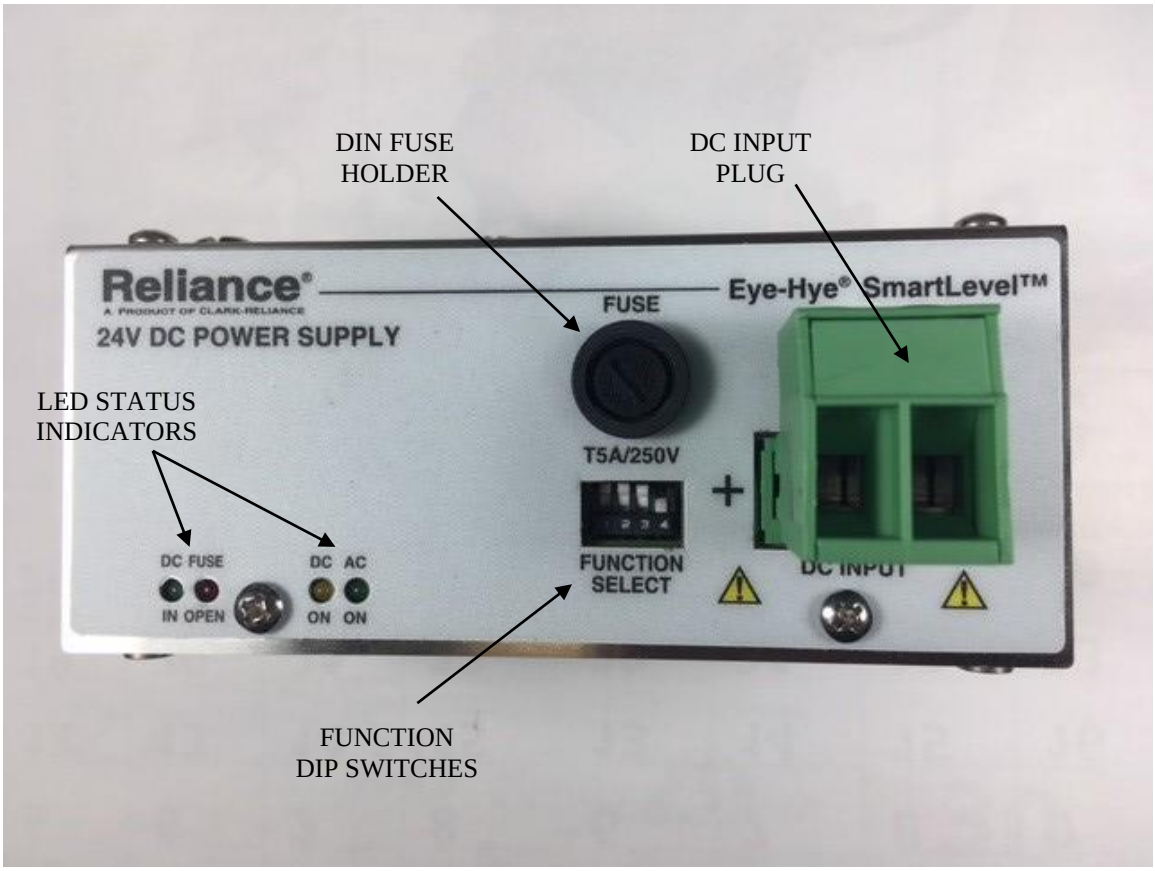

FIGURE 2 – RSLC91 24VDC Power Supply Assembly

Four FUNCTION SELECT DIP switches allow the RSLC91 24VDC power supply to run in different modes. They are as follows.

1.) **SW1**: POWER SUPPLY ENABLE – This switch enables or disables the operation of the power supply. UP ENABLES and DOWN DISABLES the power supply.
2.) **SW2**: AC FAULT INDICATION – This switch is used to enable local indication of an AC power failure. When ENABLED in the DOWN position, any loss of AC power will be indicated by flashing the GREEN AC ON LED when the AC power is restored. This flashing indication will remain in effect until it is RESET by TOGGLING the DIP switch or by disabling AC FAULT indication. AC FAULT INDICATION is DISABLED in the UP position.

3.) **SW3**: AC FAULT SYSTEM INDICATION – Working in conjunction with AC FAULT in the ENABLED mode, this function turns the STATUS LED on any of the configured RSLI5 or RSLI7, Medium or Small LED Level Indicators, from it normally OK GREEN color to RED, when the switch is ENABLED in the DOWN position. The STATUS LED on the level indicators will light continuously and NOT blink. AC FAULT SYSTEM INDICATION is DISABLED in the UP position.

4.) **SW4**: HIGH TEMP COOLING – This switch turns ON the incorporated cooling fan, when ENABLED in the DOWN position. This is recommended when there are more than (10) RSLC23 Probe Modules installed in the system AND more than (1) peripheral is used in the I/O slots. It is also recommended when operating in ambient temperatures exceeding 95°F, (35°C). The fan is OFF or DISABLED in the UP position.

STANDALONE DC CONFIGURATION

This configuration is ONLY powered by a single RSLC91 24VDC power supply. NO additional RSLC91 24VDC OR RSLC25 AC power supplies are used. The RSLC91 24VDC power supply can be installed in either POWER SUPPLY 1, (J17), OR in POWER SUPPLY 2, (J18), positions of the RSLC28 Motherboard. See FIGURE 3.

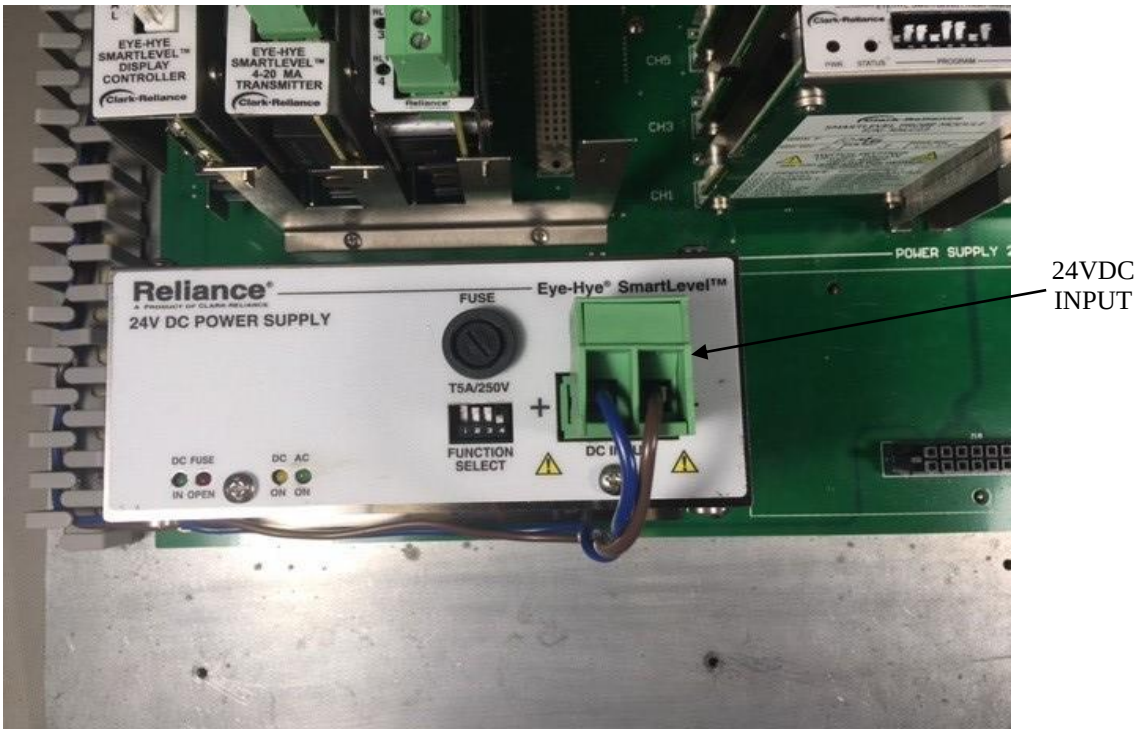

FIGURE 3 – Standalone RSLC91 24VDC Power Supply in POWER SUPPLY 1 position

There are NO AC MAINS supply connections required in TB1 or TB2 of the RSLC28 Motherboard. In this configuration, only FUNCTION DIP switches SW1 and SW4 on the front panel, do anything because NO RSLC25 AC power supply is installed. FUNCTION DIP switch SW1 will still ENABLE/DISABLE the power supply without removing or shutting OFF the 24VDC power and SW4 with still ENABLE/DISABLE the cooling fan. NOTE: the GREEN DC IN LED indicator will always light when 24VDC power is connected and applied. The YELLOW DC ON LED only lights when the 24VDC power is applied AND the supply is ENABLED by placing FUNCTION DIP switch SW1 in the ENABLED or UP position.

DUAL DC CONFIGURATIONS

This configuration is powered by two RSLC91 24VDC power supplies. Here the RSLC91 24VDC power supplies are installed in both POWER SUPPLY 1, (J17), AND in POWER SUPPLY 2, (J18), positions of the RSLC28 Motherboard. In this configuration, each supply acts as an automatic backup for the other and share the total current for the system. If either supply fails, the current on the remaining one with double to make up for the lost one.

This configuration allows, like with dual RSLC25 AC power supplies, the 24 VDC input to be for each RSLC91 24VDC power supply to be sourced from a single 24VDC source for redundancy, see FIGURE 4, OR from a separate 24 VDC source, to provide a completely separate backup supply, see FIGURE 5.

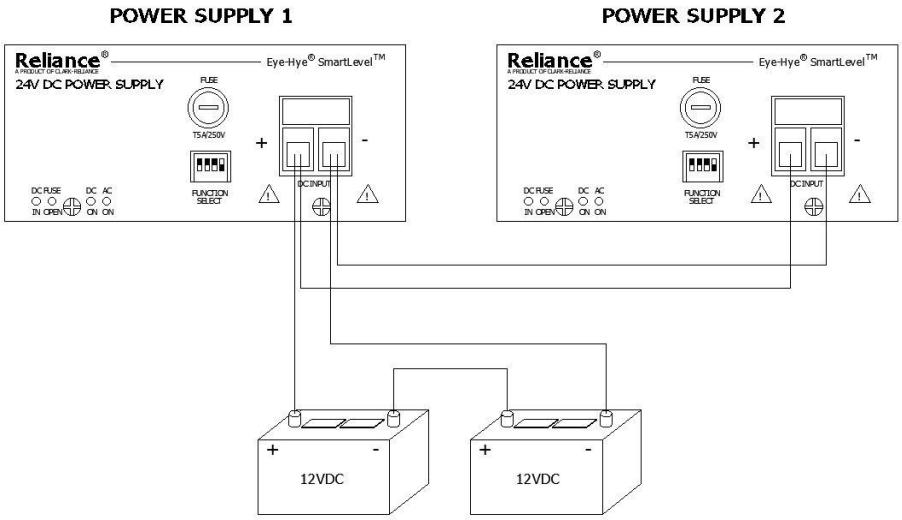

FIGURE 4 – Dual RSLC91 24VDC Power Supplies single sourced for redundancy.

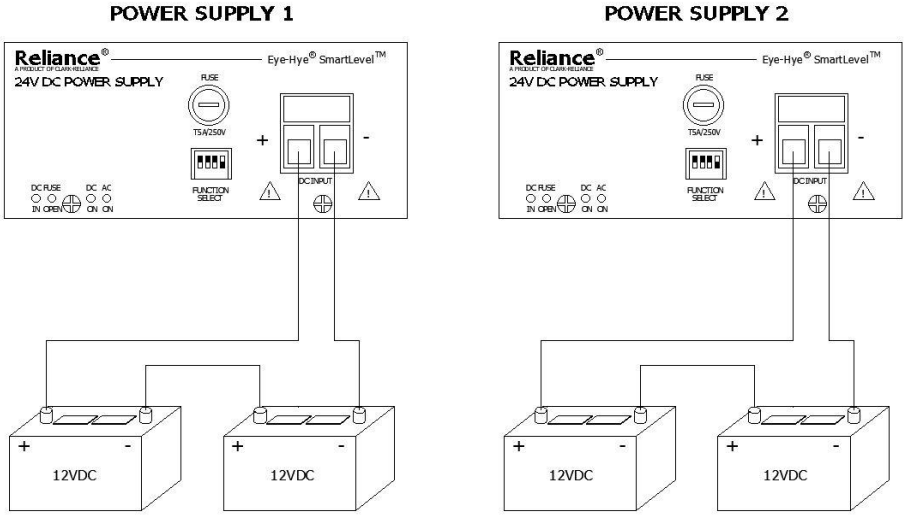

FIGURE 5 – Dual RSLC91 24VDC Power Supplies separately sourced for backup

AC/DC CONFIGURATION

This configuration is powered by BOTH an RSLC91 24VDC and a RSLC25 AC power supply. The RSLC91 24VDC power supply MUST ALWAYS be installed in the POWER SUPPLY 1 position, (J17), and the RSLC25 AC power supply MUST ALWAYS be installed in POWER SUPPLY 2 position,(J18), of the RSLC28 Motherboard. See FIGURE 6. AC MAINS are ONLY connected to AC MAIN2, TB2, of the RSLC28 Motherboard, configuring fuse (2)/shunt in fuse holders F3 and F4 per FIGURE 6 and the SmartLevel's IOM R500.E249. NO connections are made to AC MAIN1, TB1, and NO fusing elements are required in F1 and F2.

Switching from AC operation to DC operation is accomplished by the RSLC91 24VDC supply losing the "Power Good" signal from the RSLC25 AC power supply. This signal is routed through the RSLC28 Motherboard to the CPU connector, J16. From here the signal is passed over to the POWER SUPPLY 1 connector, J17. In order to make this connection, a special connector, the RSLC107 AC/DC Jumper, is plugged into J16, and MUST BE installed in order for the AC/DC switching to take place. See FIGURE 7.

FIGURE 6 – Both 24VDC RSLC91 & AC RSC25 Installed

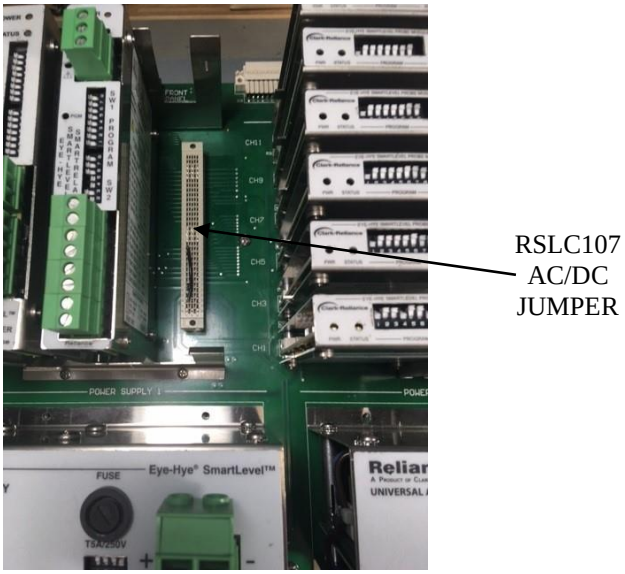

FIGURE 7 – RSLC107 AC/DC JUMPER

Generally, the SmartLevel RSLC-XX system is fully configured, tested, and shipped from the factory as shown in FIGURE 6 if both the RSLC91 24VDC and RSLC25 AC power supplies are ordered. Should an RSLC91 24VDC power supply be ordered as a backup for an existing system, an RSLC105 AC/DC Power Supply Jumper and Cable Kit should be ordered, as it contains additional parts and instructions for adding the DC supply.

THE RSLC105 AC/DC POWER SUPPLY JUMPER & CABLE KIT

The RSLC105 AC/DC Power Supply Jumper and Cable Kit is required when an RSLC91 24VDC power supply is being added to an already existing SmartLevel RESC-XX system that is operating on a single RSLC25 AC power supply. The kit contains the extra parts and the instructions to perform the upgrade. See FIGURE 8.

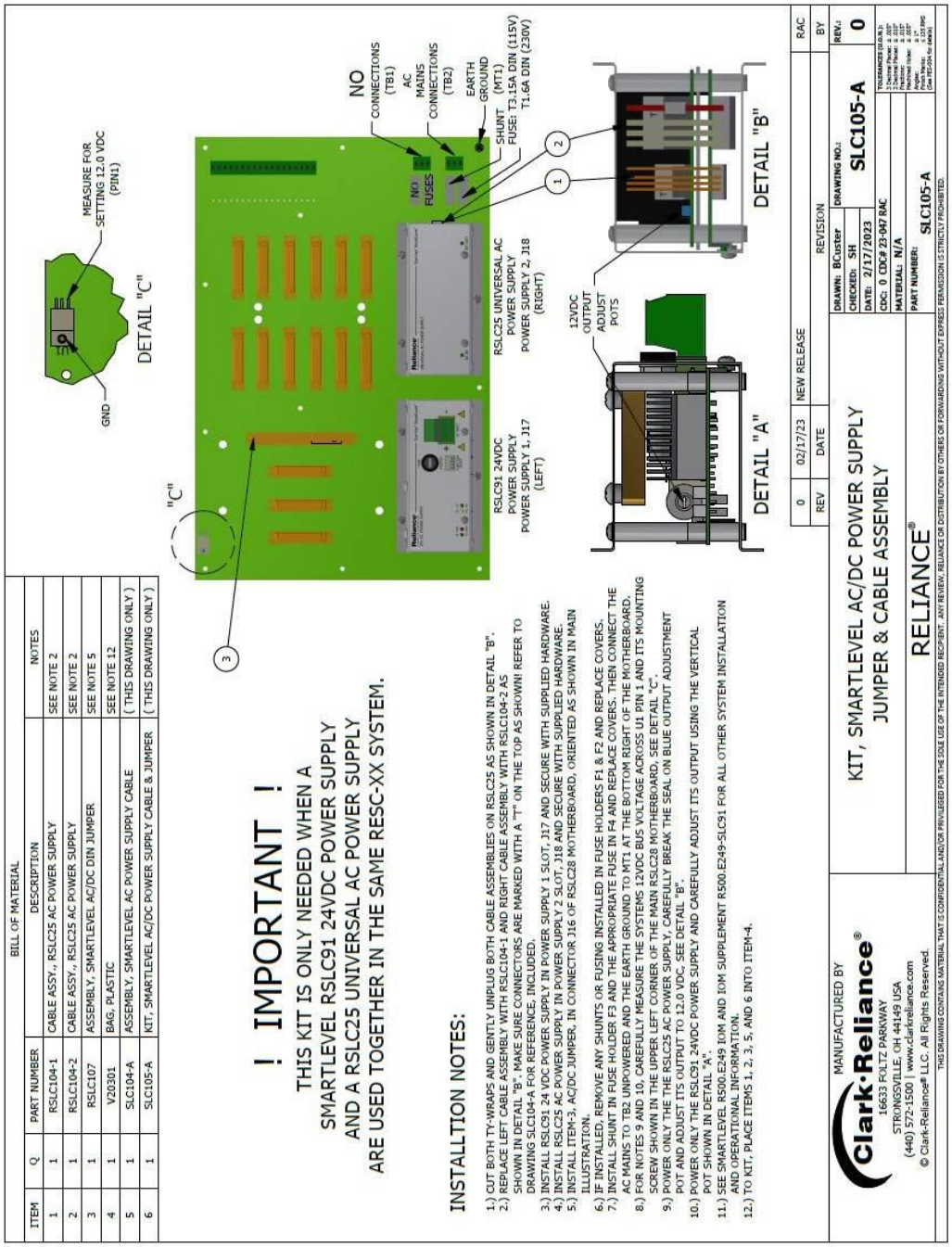

FIGURE 8 – RSLC105 SmartLevel AC/DC Power Supply Jumper & Cable Kit

OPERATION

The SmartLevel RSLC91 24vdc has no operational aspects outside of providing the SmartLevel system it is installed on intrinsic safe probe connections to the Electrolev column. Any other aspect regarding the installation, operation, and maintenance of the system can be found in the SmartLevel's IOM, document R500.E249.

SYSTEM TESTING

System testing of the RSLC91 24VDC power supply can be performed by exercising the FUNCTION SELECT DIP switches on the front panel. Proper switching between AC and DC operation, when an RSLC25 VAC power supply is installed, can be tested by disconnecting or turning OFF the AC power and verifying the RSLC91 24VDC power supply has turned ON and is powering the system. Apply AC power to complete verification. The YELLOW – DC ON and GREEN – AC ON LED panel indicators should concur.

ROUTINE MAINTENANCE

Aside from routine maintenance required and stipulated in the SmartLevel's IOM, R500.E249, the following items can be periodically inspected.

1) Visually inspect the connection and integrity of ALL the Earth grounds within the system. It is imperative that this be maintained for safety.
2) Visually inspect all LED indicators for proper and desired operation and indication.
3) Periodically inspect all electrical connections and make sure they are free of any corrosion and are secure.
4) Inspect and maintain the integrity of the enclosure components to keep all electronics from the ingress of moisture.

SPECIFICATIONS

VDC Input:	24 VDC NOMINAL, (20 – 28 VDC)
Max Input Current:	3A @ 20 VDC
Wire Size:	Min 16 AWG/ Max 12 AWG
Ambient Temperature:	-4F (-20C) < Ta < 122F (50C)
Humidity:	90% Non-condensing max.
Fan Operation:	Recommended operation in systems having 11 or more RSLC23 probe modules
AC/DC Switching Time:	Less than 1 second. Visible on LED displays No effect on any relay contact.
Agency Approval:	FM 7710 Low Water Limit Control for Boilers
Fuse:	DIN style T5.0A/250V, (CR P/N: E-F-DIN-0500-T)

REPLACEMENT PARTS WARNING

THE USE OF NON-ORIGINAL EQUIPMENT MANUFACTURER PARTS (SUCH AS GASKETS, PROBES, MODULES, ETC.), WILL VOID AND AGENCY APPROVAL (FM, UL, CAS, CRN, ABS, ETC.), PRESSURE, TEMPERATURE, ELECTRICAL RATING, AND WARRANTY OF THE EQUIPMENT. CLARK-RELIANCE REQUIRES THE USE OF OEM PARTS FOR ALL REPAIRS IN/ON THIS PRODUCT IN ORDER TO MAINTAIN PLANT AND PERSONNEL SAFETY AND RELIABLE OPERATION.

CONSULT THE FACTORY OR YOUR LOCAL CLARK-RELIANCE REPRESENATIVE WITH ANY QUESTIONS. PLEASE HAVE THE MODEL NUMBERS AND/OR REFERENCE DRAWING NUMBERS AVAILABLE WHEN CALLING. YOU CAN ALSO CONTACT US AT OUR WEBSITE www.relianceboilertrim.com OR RelianceAppEng@clark-reliance.com.