



Elegance™
Electrician's Installation Guide

CentraLite Systems, Inc. 6420 Wall St. Mobile, AL 36695
Phone: 877-466-5483 Fax: 251-607-9119
©2003-2005 CentraLite Systems, Inc.

Revised 10/20/2005

ELECTRICIAN'S INSTALLATION GUIDE

CentraLite *Elegance*™ System

GENERAL INFORMATION

The CentraLite *Elegance* system is a centrally located, microcomputer controlled home lighting system. The system provides on-off control of lighting and other electric devices, and automatic dimming of incandescent, magnetic low voltage, approved electronic low voltage and halogen lights

CentraLite installation is divided into **TWO** parts.

High Voltage Control

Low Voltage Control

High Voltage Control, *to be installed and connected by licensed electricians only.*

The high voltage part of the system switches the 120-volt power between the breaker panel and light fixtures. This switching occurs in the system's relay panel.

The electrician has five tasks to complete during system installation:

1. Mount system relay box in the upright position.
2. Pull high-voltage wire home runs (switch legs) from each lighting circuit controlled by CentraLite™ into the relay box.
3. Pull high-voltage power feeds from breaker panel into relay box.
4. Connect power feeds and home runs (switch legs) to relays (Electrician only connects the high voltage of the relays) and connect receptacle inside relay box.

If a relay will be controlling a load other than an Incandescent, Magnetic Low Voltage, or Halogen light, it must be replaced with a non-dimmable relay from CentraLite. This ensures that the equipment cannot be damaged by inadvertent dimming commands. Call CentraLite at 1-877-466-5483 to exchange the relay.

5. Mount switch boxes for the system's low voltage wall switches in each location as per the home's electrical plans and the home builder's request.

WARNING
The CentraLite output relay box contains dangerous high voltage electricity. Any high voltage installation and repair is to be done only by licensed and qualified electricians. All work is to be performed according to the National Electrical Code, and all applicable local codes. All electrical components are to be listed or recognized by UL. All work is to be done in a good, neat, and workmanlike manner.

Low Voltage Control, *to be installed and connected by authorized CentraLite installers.*

High Voltage Load Planning Example

(Blank forms are included at the end of this guide)

Planning is the key to a quick and problem free installation. **Never pull wire until the following form is completed.** Locate the lighting circuits to include in the installation on the electrical plan and verify them with the system installer. Then follow the example below to properly plan the installation:

Relay #	Circuit Description	Circuit Load (Amps)	Dimming? * (Incandescent, Magnetic Low Voltage, halogen Only)	Breaker Feed # 20 Amp Breakers (16 AMP recommended breaker load)
1	Kitchen Recess	5	Y	1
2	Dining Room Recess	4	Y	1
3	Great Room Recess	5	Y	1
4	Master Bedroom Recess	4	Y	2
5	Master Bathroom Fixture	3	Y	2
6	Kids Bedroom Lights	2.5	Y	2
7	Kids Bedroom#2 Lights	2.5	Y	2
8	Kids Bathroom Fixture	2.5	Y	2
9	Spare Bedroom	3	Y	3
10	½ Bath Fixture	1	Y	3
11	Office Recess	4	Y	3
12	Foyer Fixture	6	Y	3
13	Hall Recess	4	Y	4
14	Garage Lights (Fluorescent)	6.5	N	4
15	Utility Room Lights (Fluorescent)	1.5	N	4
16	Front Floods	6	Y	5
17	Front Porch Fixture	2	Y	5
18	Rear Floods	8	Y	5
19	Back Porch Fixture	2	Y	6
20	Landscape Lighting	7	Y	6
21	Playroom Recess	3	Y	7
22	Guest Suite Lights	2	Y	7
23	Guest Suite Bath	2	Y	7
24	Reading Room Lights	3	Y	7

* If a relay will be controlling a load other than an Incandescent, Magnetic Low Voltage, or Halogen light, it must be replaced with a non-dimmable relay from Centralite. This ensures that the equipment cannot be damaged by inadvertent dimming commands. Call Centralite Toll Free at 1-877-466-5483 to exchange the relay.

High Voltage Feed Connection

(From service panel to relay box)

EXAMPLE



Breaker Feed #	Load (Amps)
1	14
2	14.5
3	14
4	12
5	16
6	9
7	10
Total	89.5

FOR MORE DETAILS REGARDING RELAY CONNECTION, PLEASE REFER TO THE RELAY CONNECTION SECTION AT THE END OF THIS DOCUMENT

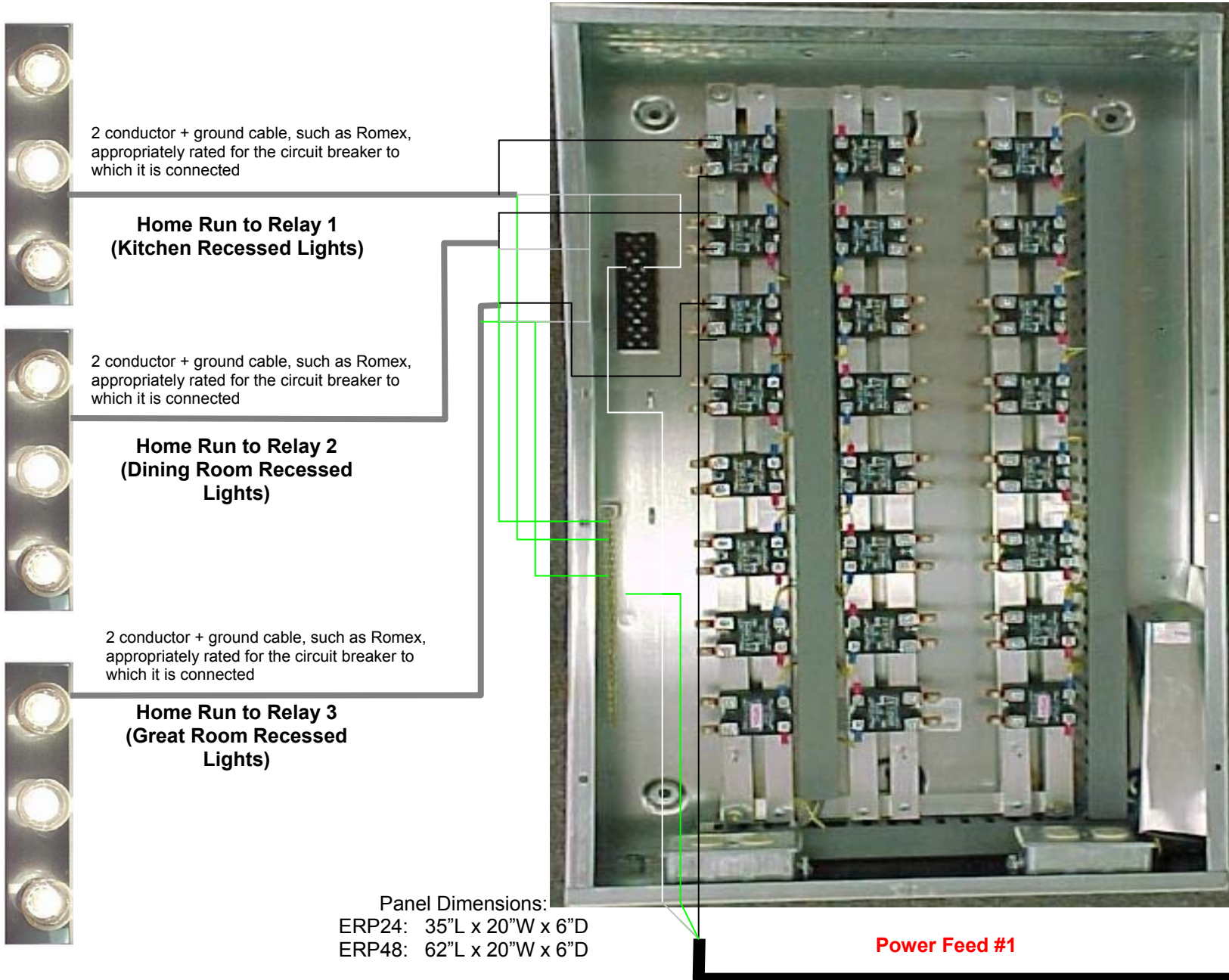
Each feed consists of a 2-conductor cable with ground (hot, neutral, ground) cable, such as Romex, of the appropriate gauge for its circuit size:

- The copper lugs on each side of the relays are the high voltage terminals. They are non-polarized. Use #14 or #12 wire only. Torque to 45 in-lbs.
- The line hot wire should be daisy chained to the Line side high voltage terminal of each relay that it will power.
- The load hot wire goes to the other large lugs.
- Boxes are supplied with one or two isolated neutral bars. Do not use more than four #12 or six #14 wires on either side of each pole of the terminal block. Torque to 20 in-lbs.
- Use the same gauge conductor for the source ground as for the return grounds for each load. Do not use more than two No.12 or two No.14 conductors on each pole of the ground bus bar. Connect all grounds from each feed and each load. Torque to 20 in-lbs.
- USE COPPER-CLAD ALUMINUM OR COPPER CONDUCTORS ONLY.
- Size Field Wiring based on 60°C or 75°C Wire Only.
- The duplex receptacles located in the bottom of the box are for use only to energize Class 2 power supplies for the Relay Control boards, Master Control Panel, Monitor Boards, Remote Control, and STAR boards.

Illustration of the Relays and Home Runs (switch legs) associated with Power Feed #1

(See High Voltage Load Planning Example)

Repeat for each Power Feed and wire in the receptacle located in the bottom of the Relay box and the high-voltage portion of wiring is complete.



DANGER: Never assume that a relay is completely off.
Leakage current through the relay may be present and the danger of electrocution always exists unless the appropriate circuit breakers are turned off. Always turn off the appropriate breakers and test for voltage before working inside the Centralite Relay box or working on any high voltage circuits connected to Centralite.



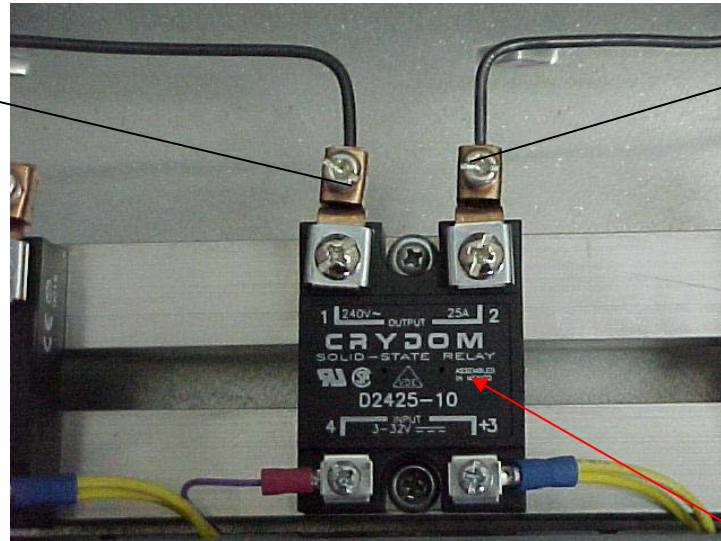
Notes on CentraLite Solid State Relays

Care should be taken before the initial system startup to detect and fix any short circuits in lighting fixture circuits controlled by CentraLite. A short circuit creates a current draw through the relay that is far greater than the relay's load rating and can likely cause the relay to fail. **Relays damaged by faulty wiring are not covered under warranty.**

Recommended Startup Method: Install a jumper between the relay's high voltage terminals before starting the home's initial electrical checkout. This allows a short circuit to be handled directly by the circuit breaker without the excessive current passing through the relay.

Line (Hot Leg feed from Breaker)

Connect to relay terminal #1.
To be connected by licensed electrician only.



Load (Switched Hot Leg Out to Circuit of Light fixtures)

Connect to relay terminal #2.
To be connected by licensed electrician only.

5 Volt DC Control Cable from
Relay Driver Board.
(Factory Connected.)

DANGER: Never assume that a relay is completely off.
Leakage current through the relay may be present and the

Relays are factory rated 240 Volts AC at 25 Amps
or 40 Amps.

Installing Centralite Wall Switch Boxes During Rough-In

As shown below, a single-gang wall box can include up to four low-voltage Centralite wall switches. If more than four switches are needed in a particular location, use a multi-gang wall box of appropriate size. If the location and number of switches per wall box is not listed on the electrical plan, see the system installer for the list of locations.

Centralite switch assemblies use a standard Decora®-style faceplate.



Conventional high-voltage switches and wires must never share wall boxes with low voltage Centralite switches. If low-voltage and high-voltage switches are to share a location, they must be housed in separate wall boxes.

In some instances, low-voltage may be on one side and high-voltage on the other if a divider is used inside the box. Consult the N.E.C. and local codes.

® Decora is a registered trademark of Leviton Mfg. Co. Inc.

ERP-24

High Voltage Load Planning Sheet

Planning is the key to a quick and problem free installation. **Never pull wire until the following form is completed.** Locate the lighting circuits to include in the installation on the electrical plan and verify them with the system installer. Then complete the form below to properly plan the installation:

Relay #	Circuit Description	Circuit Load (Amps)	Dimming? * (<u>Incandescent.</u> <u>Magnetic Low Voltage.</u> <u>halogen Only</u>)	Breaker Feed # 20 Amp Breakers (16AMP recommended breaker load)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

* If a relay will be controlling a load other than an Incandescent, Magnetic Low Voltage, or Halogen light, it must be replaced with a non-dimmable relay from Centralite. This ensures that the equipment cannot be damaged by inadvertent dimming commands. Call Centralite at 1-877-466-5483 to exchange the relay.

Breaker Feed #	Load (Amps)

DANGER: Never assume that a relay is completely off! Leakage current through the relay may be present and the danger of electrocution always exists unless the appropriate circuit breakers are turned off. Always turn off the appropriate breakers and test for voltage before working inside the Centralite relay box or working on any high voltage circuits connected to Centralite.

ERP-48

High Voltage Load Planning Sheet

Planning is the key to a quick and problem free installation. **Never pull wire until the following form is completed.** Locate the lighting circuits to include in the installation on the electrical plan and verify them with the system installer. Then complete the form below to properly plan the installation:

Relay #	Circuit Description	Circuit Load (Amps)	Dimming? * (<u>Incandescent</u> , <u>Magnetic Low Voltage</u> , <u>halogen Only</u>)	Breaker Feed # 20 Amp Breakers (16AMP recommended breaker load)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				

(Planning sheet continued on next page for relays 37 - 48)

RELAY CONNECTIONS

(HIGH VOLTAGE SIDE)

The high voltage side of the relays are the two copper lugs. **DO NOT CONNECT ANY HIGH VOLTAGE A.C. TO THE SMALLER LOW VOLTAGE TERMINALS.**

FOR YOUR CONVENIENCE, LUG CONNECTORS ARE PREINSTALLED AND PRE-TORQUED. ONE OR TWO 12- OR 14- GAUGE WIRES MAY BE INSTALLED IN THE LUG SLOT AND TIGHTENED WITH A COMMON SLOT TYPE SCREWDRIVER OR ROBERTSON'S SQUARE-BIT SCREWDRIVER. MAXIMUM TORQUE VALUE IS 45 INCH-LBS.

EITHER OF THE HIGH VOLTAGE TERMINALS MAY BE USED FOR INPUT OR OUTPUT AS THEY ARE NOT POLARIZED.

ONE ISOLATED NEUTRAL BAR IS PROVIDED FOR THE CLRБ-24/E. TWO ISOLATED NEUTRAL BARS ARE PROVIDED FOR THE CLRБ-48/E.

USE COPPER-CLAD ALUMINUM OR COPPER CONDUCTORS ONLY SIZE 14- OR 12- GAUGE FOR HIGH VOLTAGE RELAY CONNECTIONS.

SIZE FIELD WIRING BASED ON 60°C OR 75°C WIRE ONLY.

ELECTRICIAN'S INSTALLATION GUIDE

Elegance ROUGH-IN QUICK REFERENCE CHECKLIST

1. All wiring must be done in accordance with the National Electrical Code. All wiring must comply with all local electrical codes.
2. Try to envision the *Elegance* system as follows: You remove all the switches from the walls and place them all in the relay box. They now become electronic switches, and are controlled by a micro controller in the MCP box.
3. Plan locations for relay boxes. Relay boxes are 6" deep, 20" wide, and either 35" tall or 62" tall depending on the number of relays in the box.
4. Pull switch leg home runs for each switch leg to be controlled by the system from the first fixture in a circuit back to the relay panel.
5. Calculate the lighting load requirements, and pull enough 110 Volt feeds from the breaker box to the relay panel in order to provide enough feed capacity plus some margin. Power must also be provided to the receptacles in the relay box. The power used by the plug-in transformers will be far less than 1 amp, so you may use a lighting circuit, or provide a separate feed.
6. Bring all 110-volt wires in and out through the knockouts in the top of the box. Low voltage will enter the bottom and be kept separate from the 110-volt wires by a wire duct barrier.
7. One isolated neutral bar is provided for the CLR-B-24/E. Two isolated neutral bars are provided for the CLR-B-48/E.

ELECTRICIAN'S INSTALLATION GUIDE

Elegance TRIM-OUT QUICK REFERENCE CHECKLIST

1. All wiring must be done in accordance with the National Electrical Code. All wiring must comply with all local electrical codes.
2. Try to envision the *Elegance* system as follows: You remove all the switches from the walls and place them all in the relay box. They now become electronic switches, and are controlled by a micro controller in the MCP box.
3. **Be Careful not to short any 110 Volt wiring to the Low-Voltage Class II wiring or terminals.**
4. Connect all grounds and neutrals. Several relays may be fed from a single 110-volt breaker, but be sure to provide some safety margin. The large terminals on the relays are the 110-volt terminals. Be sure that the wire is secured in place between the retainer and the post, not beside the post.
After each relay is connected, pull on the wire to check for security.
5. Be sure to complete the job in a neat manner and insure at least ½" spacing or a barrier between all 110 volt wire and all Class II wires.

START-UP

Prior to starting up the *Elegance* units, test each lighting circuit by providing a short across the two 110-Volt terminals of each relay. The lights associated with that circuit should come on when the high voltage terminals on the relay are shorted out. If this step is not done and a short exists on the load side of a relay, it will probably cause the relay to fail. Solid state relays which are repeatedly subjected to shorts will fail either closed or open, but most often closed.

INSTALLATION AND USAGE OF NEUTRAL CIRCUITS ON ELEGANCE SYSTEMS

Caution: Centralite believes that all of the information presented below is safe and accurate, however, if a conflict exists between this documentation and national, state, or local codes, then those codes should be followed. Disconnect all power to this box before working inside.

COMMON NEUTRAL BUS BARS

The proper wiring and balance of neutral circuits is essential to insure the safe installation of an Elegance lighting control system. The system must be wired in compliance with the National Electrical Code currently in force, any state and local code amendments, and safe wiring practice.

Elegance 24 and 48 relay panels are supplied with either isolated neutral bus bars, or bakelite terminal blocks which will isolate each neutral circuit from all the others.

If you have received the wrong style neutral hardware for your installation, you may request the opposite style by calling Centralite at 1-877-466-5483, or 251-607-9119. The alternative hardware will be sent to you at no charge on an exchange basis.

The neutral bus bar consists of two plastic standoffs and an aluminum bus bar which can be used to tie all the common wires together. It is also supplied with a large aluminum lug. If you use the neutral bus bar, then it is good practice to install a #1/0 or larger copper neutral conductor between the Centralite panel and the breaker (feed) panel. Virtually all of the neutral current will then flow through the large neutral wire.

If you do not use the large lug and large neutral wire, then you must keep all the neutral feed wires the same length. The shortest of the neutral feed wires must not be more than 10% shorter than the longest of the feed wires.

Example: if a box were fed with 5 feed neutrals, using 12 amps each, then the total current fed to the box would be 60 amps. If all the neutrals are the same length, then 12 amps would flow through each of the neutral wires. If one wire is 10% shorter than all the rest, then it will carry 13.34 amps while the other wires will carry 11.665 amps each, a negligible difference. If, however, one neutral wire were to be half as long as the other wires, then 20 amps would flow through that wire while 10 amps flowed through each of the other wires. If one wire were 1/3 of the length of the other wires, then 30 amps would flow through the shorter wire while 7.5 amps would flow through each of the other 4 wires. Since the ampacity of a 1/0 copper wire in a cable or raceway is 125 amps at 60 deg. C, installing such a large separate neutral wire is quite sufficient to carry the maximum current rating of the box and it becomes irrelevant whether the other feed neutrals are longer or shorter, or if they are even connected.

BAKELITE TERMINAL BLOCKS (COMPLETELY SEPARATING AND ISOLATING THE NEUTRALS)

****If you are controlling arc fault or GFCI circuits, you must isolate the neutrals, therefore, you must use the Bakelite terminal blocks for the neutral connections.***

The Bakelite terminal blocks are large black blocks with metal screw type lugs on each side. A 24 relay panel will normally have 1 of these, but a 48 load panel will have 2. Each of the Bakelite blocks has 8 sections. The left and right sides of the block are connected, but the other 7 sections of the block are separate and isolated. You can think of them as permanently mounted wire nuts. You can place up to 4 #12 wires under each side. A good approach is to install the neutral from a feed wire on the left side, and the load neutrals which are fed by that breaker under the right side. If you are feeding more than 4 relays with that breaker, then you must also put some of the load neutrals under the left side.

Torque values: (use copper wire only)

	wire size	torque
Large lug on neutral bar:	6-2/0 AWG	50 lb-in
Small lugs on neutral or Ground bus bars	14-10 AWG 2 #14's or #12's AWG	20 lb-in 25 lb-in
Bakelite common blocks:		
Wire range: 6-18 AWG Copper only (KULKA 985 GP 08)	Up to 4 #12 AWG or Up to 6 #14 AWG (each side)	16 lb-in
Relay copper lugs	1 or 2 #14AWG Or 1 or 2 #12 AWG (or up to #6 AWG stranded)	45 lb-in