

PSP Load Shed, Demand Staging LS-**1**CX (2274C)

The following paragraphs are in reference to the various control points, connections, and description relating to this generic system main hookup drawing (LH403). This does not show the load shed contactors and line voltage wiring for the loads or sub-panels.

A – Automatic Transfer Switch (ATS), the ATS logic interface and ground/bonding to the GEN is not shown.

B – Standby generator (GEN), logic and/or connections between GEN and ATS are not shown, that information relates to the manufacturers of either or both devices.

C – Load shed demand staging controller (2274C) and field hookup points.

D – ATS internal status dry contact, closed contact when the ATS device determines the utility has returned. This UT OK contact is open with loss of utility.

*The load shed controller, upper right, plug-in terminal block needs to receive the two wires from the ATS dry contact **only**. If ATS does **not** have a dry contact available, use isolation relay kit provided, reference LH405.*

E – 12VDC power source for the load shed, demand staging controller (2274C). Connection polarity must be observed and correct. If polarity is reversed, damage to control board will occur.

It is assumed the 12V battery has a trickle charger active during non-outage. This battery is the 10-14VAC source to the load shed, demand staging, control board at all times (see G). The standby requirement is less than 0.2 amps.

F – It is assumed the battery negative terminal is the same as the bonded ground connections within the system. The 12VDC “-” terminal is the common bonding point for the controller.

G – Extend each CT’s two wires to the appropriate control board terminal block. For each CT polarity is not required; however, they must be “floating”, all wires must be connected as shown, do not tie any wires together. With 18-gauge wire, up to 20 feet is no problem. However, to reduce EMF coupling, these CT wires should be twisted pair and must be separated from any high voltage wires (especially the generator power wires) or cabling (at least 12” separation).

K – Control board interface connection point used to connect either an LCD interface module or PC. An LCD module or software and cable are required to configure this device for use.

Drawing: LH403 (page 3 of this manual)
 LH405



PSP Products, Inc.
P.O. Box 4108
Manassas, VA 20108
800 648-6802 / Fax (703) 368-8376
Web: www.pspproducts.com

H – Status LED for the load shed, demand staging operations:

- On solid = normal non-outage, UT OK is HI, GEN CT amps = 0
- 1 blink every 2 seconds = doing delay between stage step (typically 15 sec). This has precedence over all others.
- 2 blinks every 2 seconds = UT OK is LO and GEN CT amps = 0
- 3 blinks every 2 seconds = UT OK is LO and GEN CT amps > 5 amps

I – Air conditioner or heat pump compressor control wire (typically Y) is routed through these two tabs. During stage 1 shed this low voltage or control wire is opened.

- The setup question “shedding AC/HP” must be answered “yes”.
- The “AC/HP amps” value must be onsite measured and entered.

Special attention – when using these control interrupt points, stage 1 main contactor can also be used. Stage 1 internal interrupt value is the sum of the measured AC/HP amps and stage 1 entered contactor amps.

J – This REV C controller has provisions for a second AC/HP control. Basically it is identical to I above, except it is tied to stage 2 load shed. The same AC/HP measured amps value, summed with stage 2 entered amps value, etc. applies.

Comment – If these AC/HP low voltage or Class 2 contacts are not used, make sure the setup is entered “NO”.

AC/HP blue LED – The LED is illuminated when there is a non-staging interrupt. Within the logic design, there is a 3-minute ACD thus the interrupt contact (represented by these tabs) will be open during power-on start-up and/or at the end of the AC/HP thermostat call.

Options

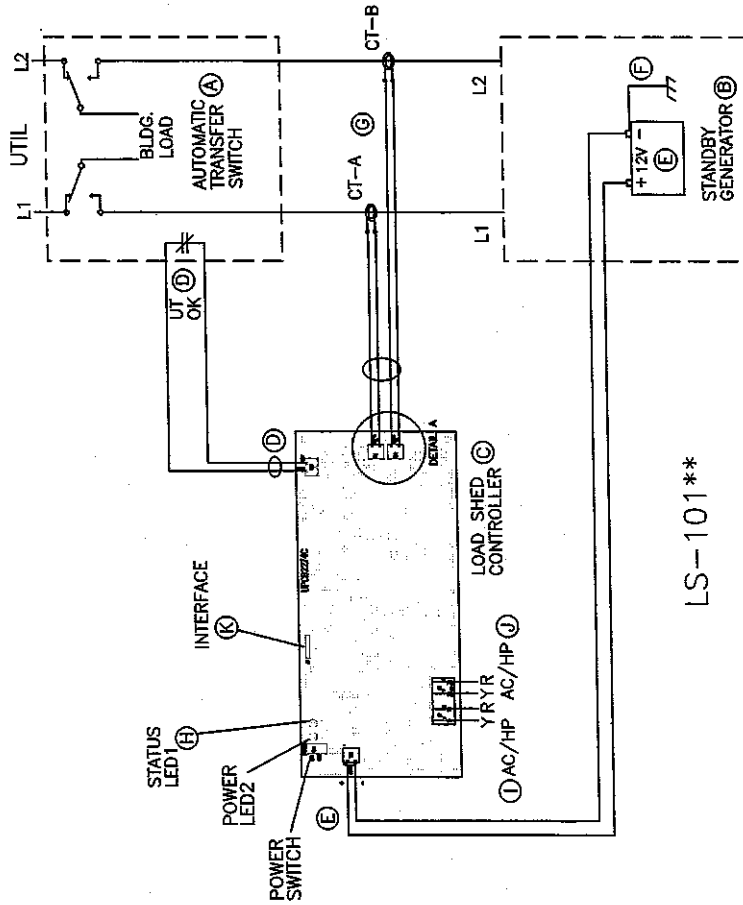
DD – When the UT OK status dry contact output is not available, a connection to the “live” utility service wires with a 240VAC relay coil can be used. Fusing is required, one side of the fuse will always be hot utility. As shown, the NO relay contacts are connected to the UT OK TB.

PSP LOAD SHED, DEMAND STAGING, 'CT' CONTROL

2274C V6.0*

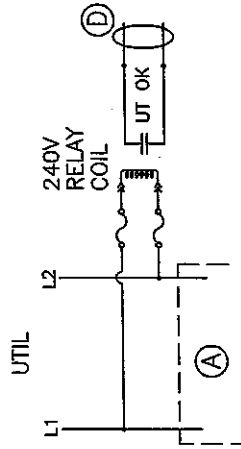
Yellow Status LED 1:

- On solid
 - 1 blink every 2 seconds
 - 2 blinks every 2 seconds
 - 3 blinks every 2 seconds
- Normal non-outage, UT OK is HI, GEN CT Amps = 0
 Performing delay between stage step (typically 15 sec)
 This has precedence over all others.
- UT OK and GEN CT Amps = 0
 UT OK and GEN CT Amps > 5 Amps

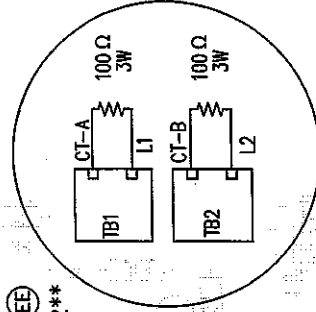


- A AUTOMATIC TRANSFER SWITCH (ATS)
- B STANDBY GENERATOR (GEN)
- C LOAD SHED CONTROLLER
- D UT OK STATUS
- E 12VDC BATTERY
- F BAT. NEG. GROUND
- G CT'S FOR GEN POWER
- H STATUS LED - see DECAL
- I AC/HP -1
- J AC/HP -2
- K LCD or PC CABLE INTERFACE
- DD 'LIVE' UTIL SERVICE RELAY
- EE LS-202**

OPTION DD: LS-RLY-KIT



OPTION EE: LS-202**



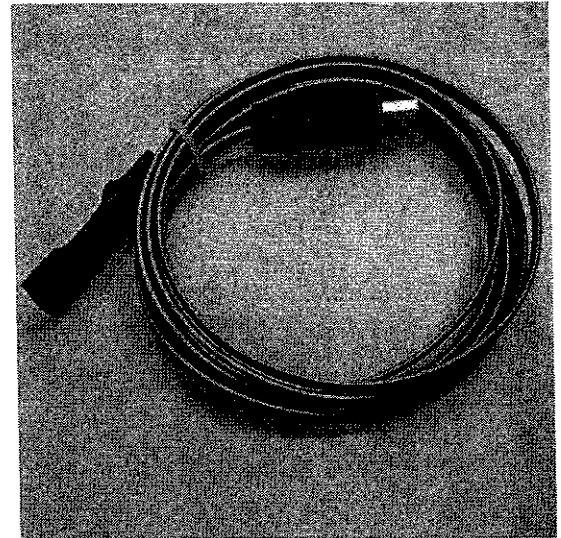
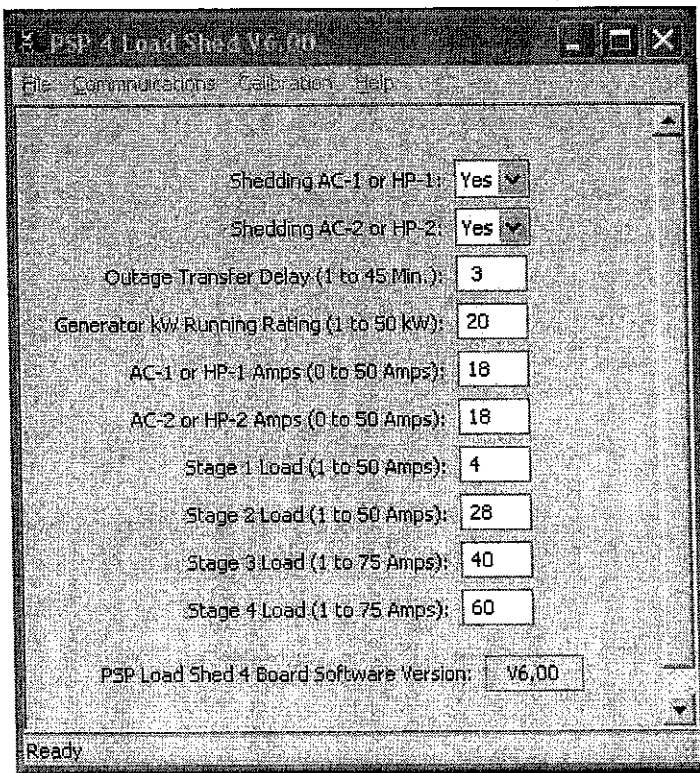
DETAIL A

DECAL: UAW004
Rev A

DRAWN		CRN	DATE	12/10/14	NUMBER	LH403	1 OF 1
CHECKED		TH	DATE	1/9/15	DESCRIPTION	TC-LS-1**CX	
APPROVED					WIRING DIAG. & DECAL		
SCALE	STATUS	NTS	Production	REV	A	VERSION 'C' CONTROL	
				Manassas, VA 20108 800 648-6802			
PROPRIETARY AND CONFIDENTIAL NOTE: THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ELECTRO INDUSTRIES, INC. ANY REPRODUCTION OR TRANSMISSION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF ELECTRO INDUSTRIES, INC. IS PROHIBITED.							
8-9-15 Rev A1: Change from V6.01 to 6.0*							

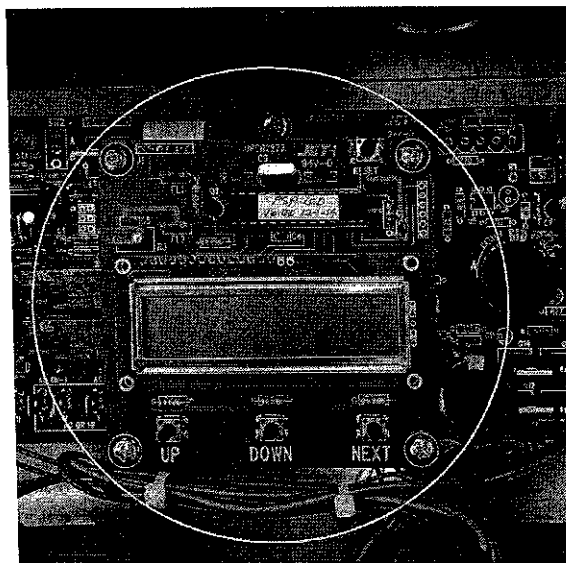
There are two options available to setup this Demand Staging load shed device.

Option 1 –use PC software and USB cable accessory kit (part number – ET-SOFT-LS-USB).



Notice: After each new WRITE, must do a power down (5 seconds) reset.

Option 2 – use LCD module accessory kit (part number SELSD2277). This module can be installed permanently to the main control board or be connected temporarily to perform the configuration process and removed once the configuration process has been completed.



Installation and usage instructions for each option are included with each accessory kit.

PSP Load Shed, CT Demand – Definitions (2274C)

UT OK – high input (or contact closed) and assumes utility has returned and solid. Low input is outage.

Outage, UT OK goes low – 5-second debounce seems long enough. All stages go to off at the end of 5 sec. It is assumed GEN PWR will not go high in the 5 seconds. Anytime the UT OK returns to high, start the Outage Transfer Delay sequence.

Outage Transfer Delay – PC setup, 1-45 minutes. This starts when UT OK goes high. All stage contactors are opened. At delay end stage step in begins.

UT OK is priority – at the end of Outage Transfer Delay, all outputs will step in, CT current is no longer monitored.

- Thus this product is **not** for manual transfer applications.

Non-manual transfer switch application – standby generator or its breaker must be off before the Outage Transfer Delay is run out.

Standby generator test – no Hot test allowed (ATS must stay in UT → LOAD position).

Target = kW (PC entry) x 1000/240

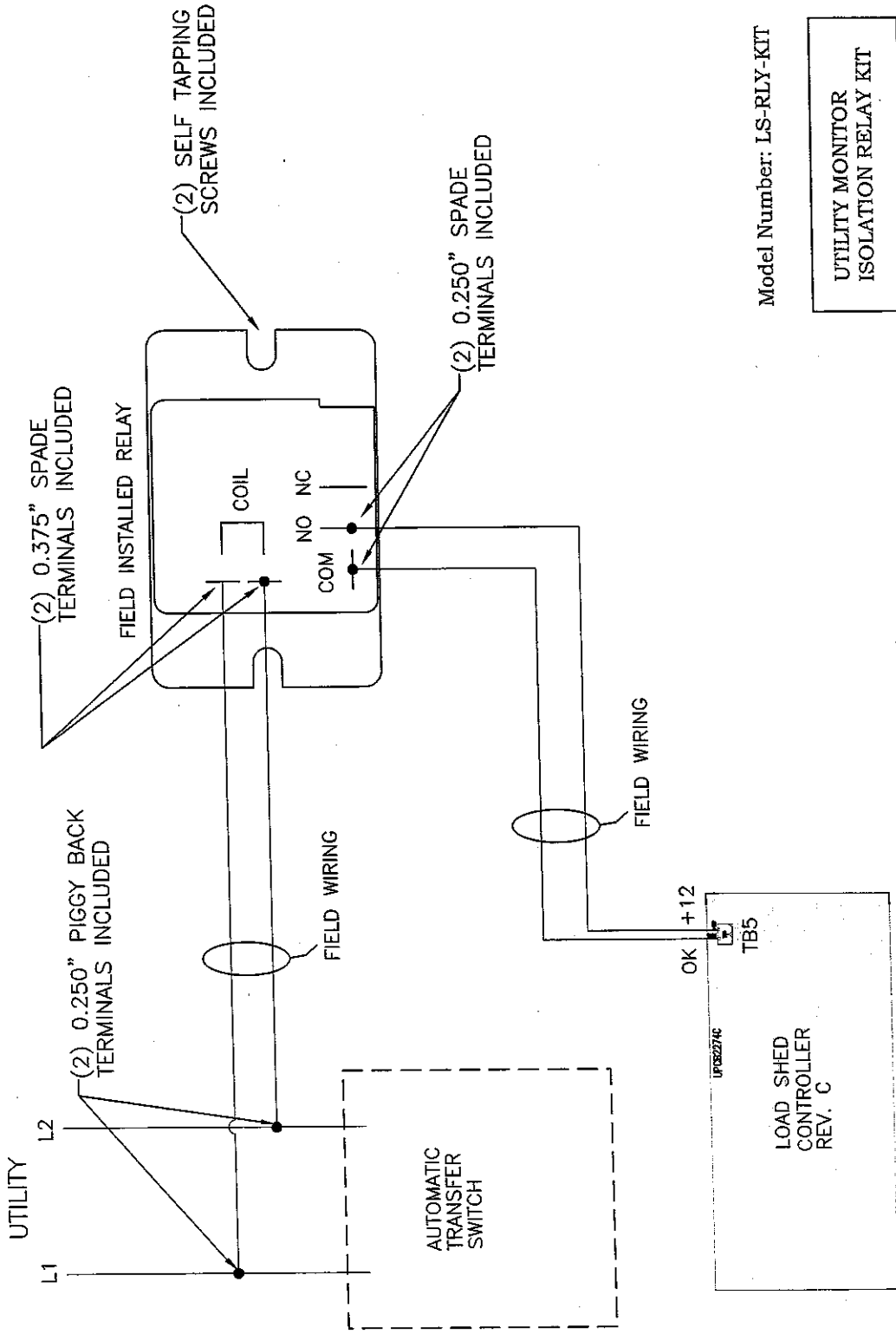
Shed, step down stages – CT current level, 2-second over target decision, highest stage. Next CT current decision (2 seconds) – if 20% over target also drop the next highest stage.

AC/HP low voltage shed – one function or relay tied directly to shed stage 1, the second function or relay tied directly to shed stage 2. Also see PC Setup.

Detecting generator connection/power – with this REV C and V6.0*, the CT is used to detect generator function, power available. This is a direct sequence function when the UT OK contact opens. After the UT OK opens (+5 seconds) if the CT does not detect generator power greater than 5 amps, all shed stage contactors remain open. When the UT OK dry contact is closed, the generator CT is ignored, all shed contacts are opened, and the Outage Transfer Delay is started. At the end of this PC setup time, the logic must assume utility is solid and the ATS has removed the generator from the load. Thus the load shed contactors step in and will be closed as long as UT OK dry contact is closed.

Hardware/software logic – each unique product model number (type and sizing) must relate to specific chip code and board hardware arrangement.

Logic transitions – except for real time generator current (CT amps) going up and down, where possible do not cause a function change when the status LED is doing a 1 count or blink.



Model Number: LS-RLY-KIT

UTILITY MONITOR
ISOLATION RELAY KIT

NAME		DATE	NUMBER	1 OF 1
DRAWN CRN		2/5/15	LH405	
CHECKED			DESCRIPTION WIRING DIAGRAM	
APPROVED			FIELD INSTALLED RELAY	
NOTE: THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF APSP PRODUCTS, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ELECTRO INDUSTRIES, INC. IS PROHIBITED.		SCALE	STATUS	REV
		NTS	Production	A



Mississauga, VA 20108
800 648-6602