

ESM_III

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Standard Features

Sequence

All outputs sequence on (T1-T7) and off (T7-T1).

Automatic Load Reset

Any load which has been shed will remain off for a minimum of two minutes. The loads will be controlled back on (unshed) by the system when the system voltage rises above the unshed level.

Shed loads can be turned on immediately by turning off the load management enable input.

Over-Voltage Indicator

The system manager continually monitors the system voltage and will activate output T15 (SW1 switch 3 ON) when it detects that the system voltage has increased above 15.0 volts. The system will not react to the spurious voltage transients which may exist in the electrical system as loads and devices are cycled.

Fast Idle Control

The system manager is capable of becoming a part of a system which controls a fast idle device. The fast idle output T15 (SW1 switch 3 OFF) will activate whenever the system voltage falls to 12.8 volts or below.

The output will deactivate if the system manager is reset, load management disabled or when the system voltage recovers above 12.8 volts.

This output should be utilized with appropriate safety interlocks.

Battery Warning

The Battery Warning feature is a special output (T 8) which indicates that the electrical system voltage has fallen below 11.9 VDC.

The Class 1 system manager continuously monitors the electrical system.

This output can be wired to a warning device that requires less than 250 mA or to a relay if higher current devices are used.

Isolated Battery Warning

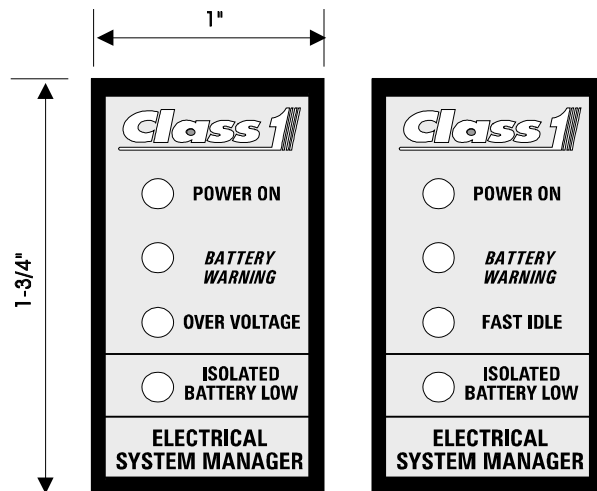
This is an optional configuration used when an isolated (auxiliary) battery needs to be monitored. J9 must be in the ISO BATTERY position and SW1 switch 1 must be turned ON. T7 becomes the Isolated Battery Warning output and activates when the isolated battery voltage falls below 11.9 VDC.

This output can be wired to a warning device that requires less than 250 mA or to a relay if higher current devices are used.

Display Panel

STANDARD PANEL DISPLAY

The *Class1* Electrical System Manager is supplied with an indicator panel. The indicator panel is designed to fit in a standard rocker switch cutout (7/8" x 1-1/2").



The indicator panel consists of four LED's:

POWER ON (GREEN WIRE) T13

This LED illuminates when power is applied to the System Manager.

BATTERY WARNING (YELLOW WIRE) T8

This LED activates when the system voltage drops below 11.9 VDC.

ISOLATED BATTERY LOW (BLUE WIRE) OPTION T7

This LED illuminates when an auxiliary battery voltage drops below 11.9 VDC.

OVER-VOLTAGE OR FAST IDLE (BROWN WIRE) T15

This LED illuminates when system voltage drops below 12.8 VDC or rises above 15.0 VDC as configured by SW1 switch 3.

GROUND (BLACK WIRE)

Connected to system ground.

System Configuration

The Electrical System Manager is configured by the use of a 4 position DIP Switch SW1 and 9 shunts (jumpers) J1 - J9.

SW1 switch	OFF	ON
1	Main Battery	Main and Isolated Batteries
2	Shed T1-T7	Shed T7-T1
3	Fast Idle	Overshutdown
4	Shed all	Don't shed T1 or T2

J1 controls polarity of the Master Switch input.

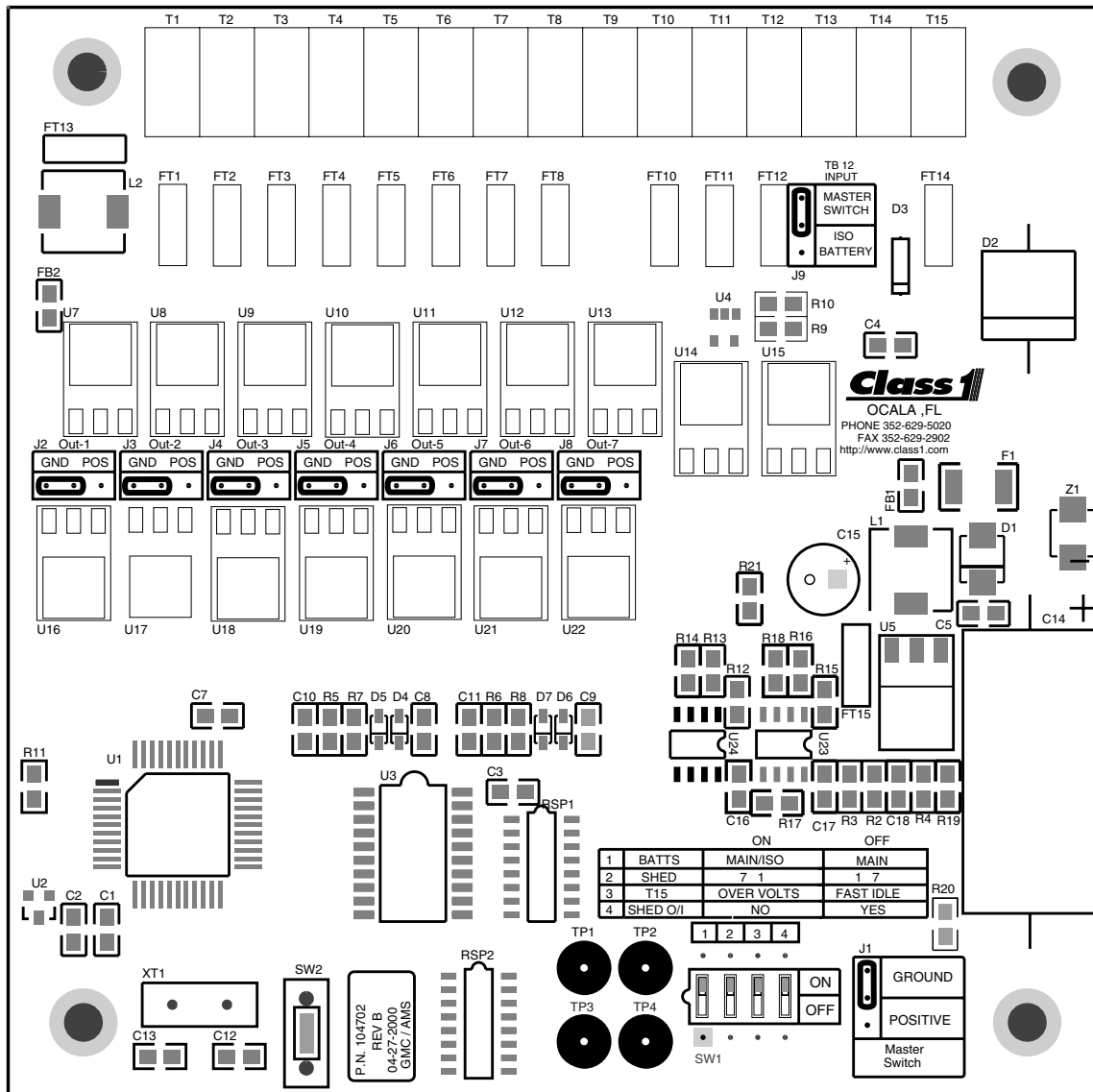
J2-J8 control the polarity of output T1 through T7

J9 controls whether T12 is tied to the Master Switch input T10 or independent for an Isolated Battery Input.

<=<CAUTION=>

When J9 is in the MASTER SWITCH position T12 is tied directly to T10. A direct short circuit will occur if an Isolated Battery Input is at T12 and a ground Master Switch input is at T10.

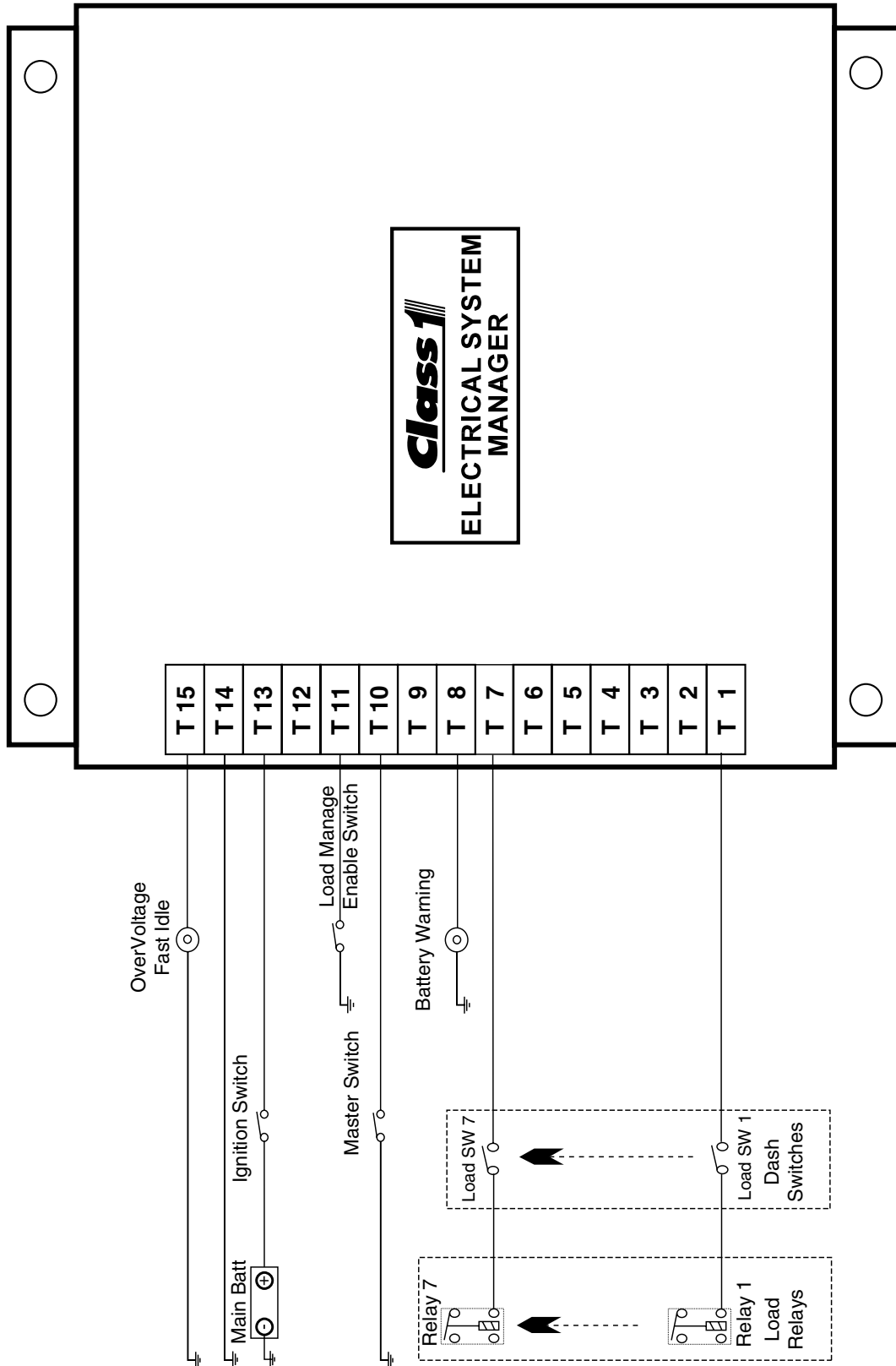
<=<CAUTION=>



Main Battery Only Configuration

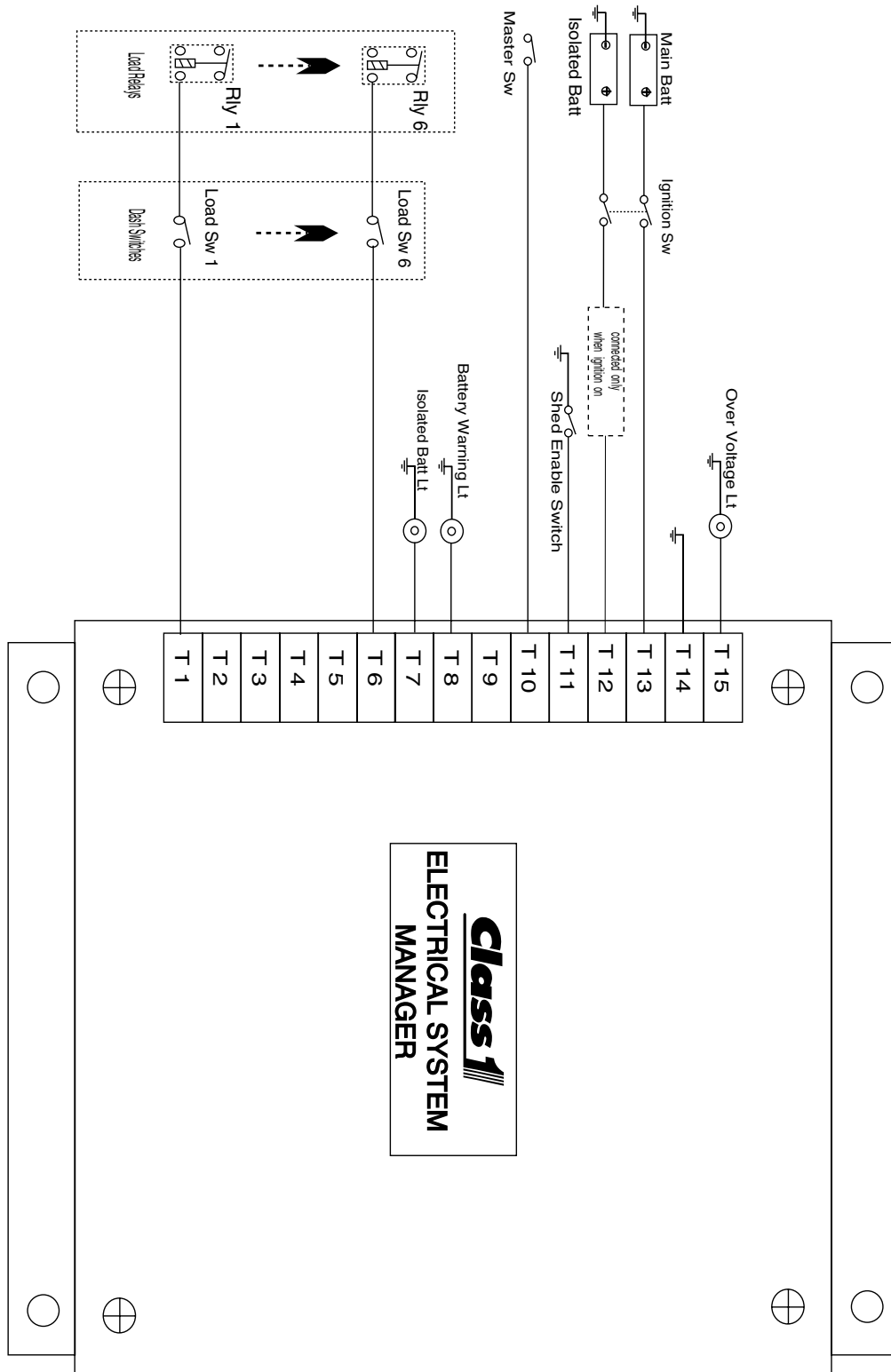
SW1 switch 1 OFF.

All seven load control outputs can be sequenced and shed. These outputs are at terminals #1 through #7 (T1 - T7). One method of wiring is shown below.

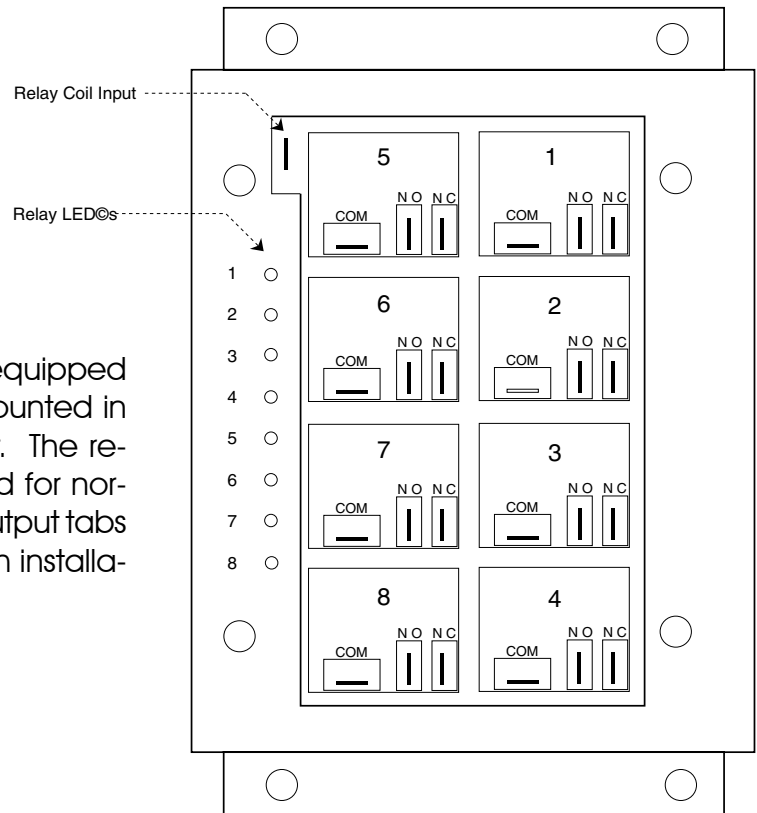


MAIN AND ISOLATED BATTERY CONFIGURATION

Jumper J9 placed in ISO BATTERY position and SW1 switch 1 is turned ON. The system manager will operate in main and isolated battery mode. A separate input for the isolated battery is located at T12 and an output for Isolated Battery Low is located at T7. This provides for six load control outputs (T1-T6) which can be sequenced and shed.



Electrical System Manager II



The Electrical System Manager II is equipped with 8 Printed Circuit Board Relays mounted in an enclosure with the load manager. The relay coil input tab should be grounded for normal installations. The common and output tabs on each relay readily allow for custom installations.

SPECIFICATIONS

OPERATING VOLTAGE

7.5 to 20 Volts DC

OUTPUTS

High Side Drivers Vmain @ 0.5 amp (source)
Low Side Drivers Ground @ 0.5 amp (sink)

ISOLATED BATTERY INPUT

0 to 20 Volts DC

TRANSIENT SUPPRESSION

Outputs are protected against thermal overload, direct shorts and transient spikes from -50 to 60 Volts DC.

LOAD CONTROL

Loads will be sequenced on whenever the Master Switch is activated. The System Manager will control loads and the high idle function only when the Load Manage Enable input (terminal #11) is active. Loads are shed from lowest priority to highest priority, T-1 to T-7, unless SW1 switch 2 is turned ON. Then they shed T-7 to T-1.

The voltage points are respectively:

	Shed	Unshed	SW1-2
T1	12.4	12.8	T7
T2	12.2	12.4	T6
T3	12.0	12.2	T5
T4	11.8	12.0	T4
T5	11.4	11.6	T3
T6	11.0	11.4	T2
T7	10.8	11.2	T1

If SW1 switch 2 is ON, then the order is reversed as shown in SW1-2 column.

If SW1 switch 4 is ON, then T1 and T2 will not shed.

Voltage must drop below the shed point for 60 seconds for a load to shed and voltage must be above the shed point for 600 seconds for a shed load to unshed.

MANUAL RESET

Toggleing the Master Switch off for more than 2 seconds will cycle all loads off. The system will return to normal operation when the Master Switch is toggled back to the on position.

SPECIFICATIONS

TERMINAL BLOCK #15

This output becomes active for the overvoltage light (high voltage) or for high idle control (low voltage) dependent on the setting of SW1 switch 3 .

OVER-VOLTAGE INDICATOR

Activates at and above 15.0 VDC and deactivates below 15.0 VDC.

HIGH IDLE CONTROL

The output will activate when the voltage drops below 12.8 VDC for more than 1 minute. The output will remain ON for a minimum of 5 minutes *and* until the voltage exceeds 12.8 VDC.

NOTE: This output must only be used in conjunction with the appropriate safety interlocks for the intended application.

AUXILIARY BATTERY

When an auxiliary battery is present and the system is configured for it, The System Manager will monitor the auxiliary battery. Output (TB #7) is turned on when the battery voltage drops below 11.9 VDC for more than 10 seconds. The output will remain on until the isolated battery voltage is greater than 11.9 VDC. If the main battery bank voltage exceeds 13 VDC, the output will deactivate and the system will then recheck the isolated battery voltage after a short delay. This allows the system to become part of a battery separation solenoid system.

NOTE: When configured to monitor a second battery source, only 6 loads can be controlled as output #7 is utilized for the isolated battery indicator. All other functions are unchanged.

LOW VOLTAGE WARNING OUTPUT

Output from T8 is disabled when the monitored voltage is above 11.9 VDC. At and below this level, the output will turn on to indicate low voltage.

MODELS AND FUNCTIONS

Existing System Managers and System Manager II's

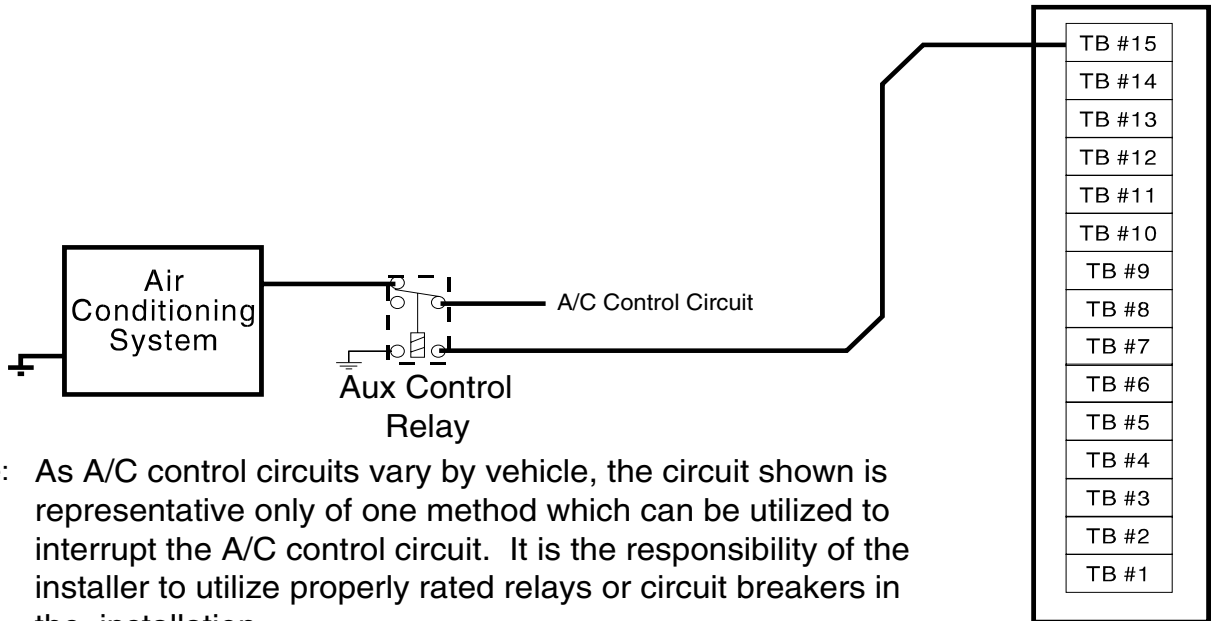
				100633	100675	100708	100767	100833	100899
Terminal Block	Function	I/O	Polarity						
15	Overvoltage light	Output	Positive	X	X	X	X	X	X
	Fast idle control	Output	Positive	X	X	X	X	X	X
14	System Ground	Input	Ground	X	X	X	X	X	X
13	Ignition (main battery)	Input	Positive	X	X	X	X	X	X
12	Isolated battery	Input	Positive	X	X	X			
	Master Switch	Input	Positive				X	X	X
11	Shed Enable (Load Management)	Input	Ground	X	X	X	X	X	X
10	Master Switch	Input	Ground	X	X	X			
9	NC								
8	Battery Low Warning Light	Output	Positive	X	X	X	X	X	X
7	Isolated Battery Low	Output	Positive	X	X				
		Output	Ground			X			
7 - 1	Load 7 - Load 1	Output	Positive	X	X		X	X	
		Output	Ground			X			X

SHUNT AND SWITCH SETTINGS TO MATCH EXISTING UNITS FOR REPLACEMENT PURPOSES.

Model	MASTER	OUTPUT	ISO	MAIN	SHED1-7	FAST IDLE	SHED 0 & 1
	J1	J2-8	J9	SW1-1	SW1-2	SW1-3	SW1-4
100633	GND	POS	ISO	OPT	OFF	OPT	OFF
101084	GND	GND	ISO	OPT	OFF	OPT	OFF
100767	POS	POS	MSTR	OPT	ON	OPT	ON
101119	POS	GND	MSTR	OPT	ON	OPT	ON

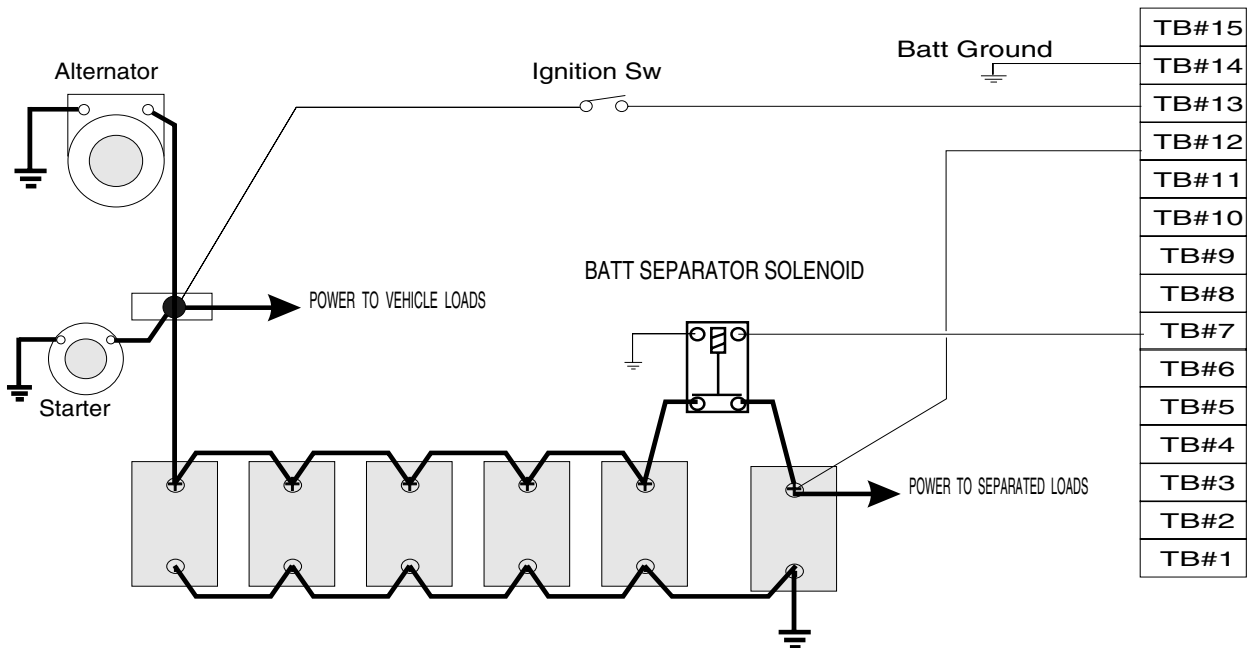
OPT indicates the switch should be positioned to match current operation.

SAMPLE CIRCUITS

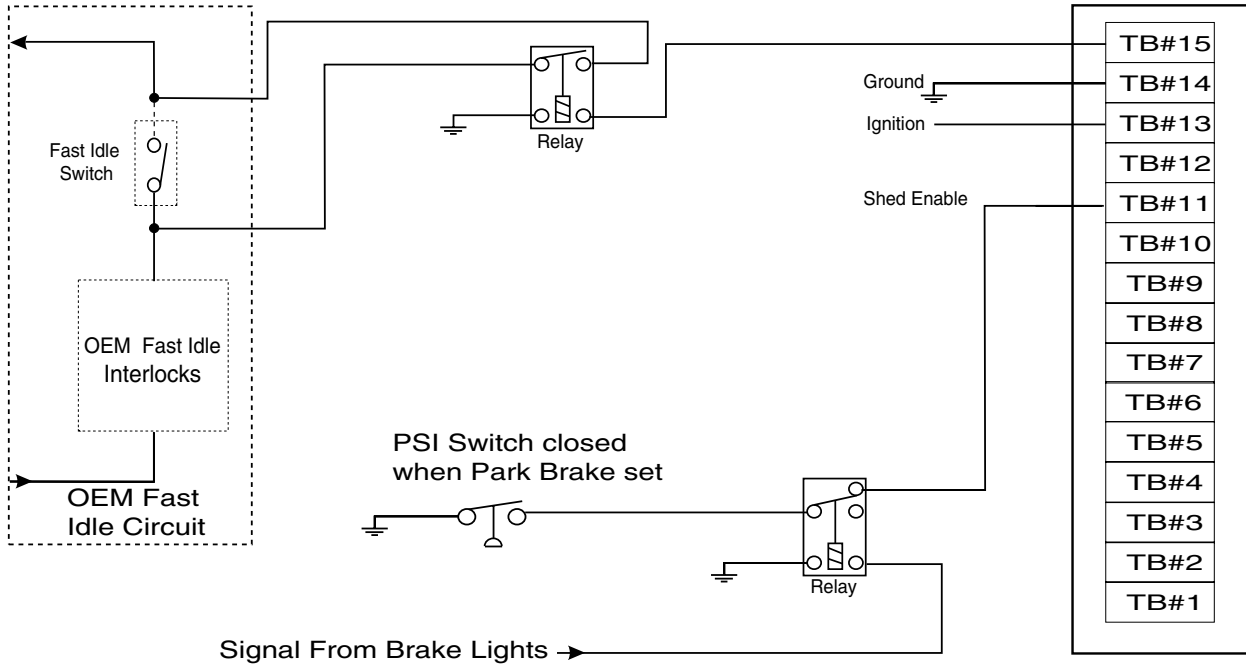


Note: As A/C control circuits vary by vehicle, the circuit shown is representative only of one method which can be utilized to interrupt the A/C control circuit. It is the responsibility of the installer to utilize properly rated relays or circuit breakers in the installation.

The loading on output #15 should not exceed 0.5 amps.

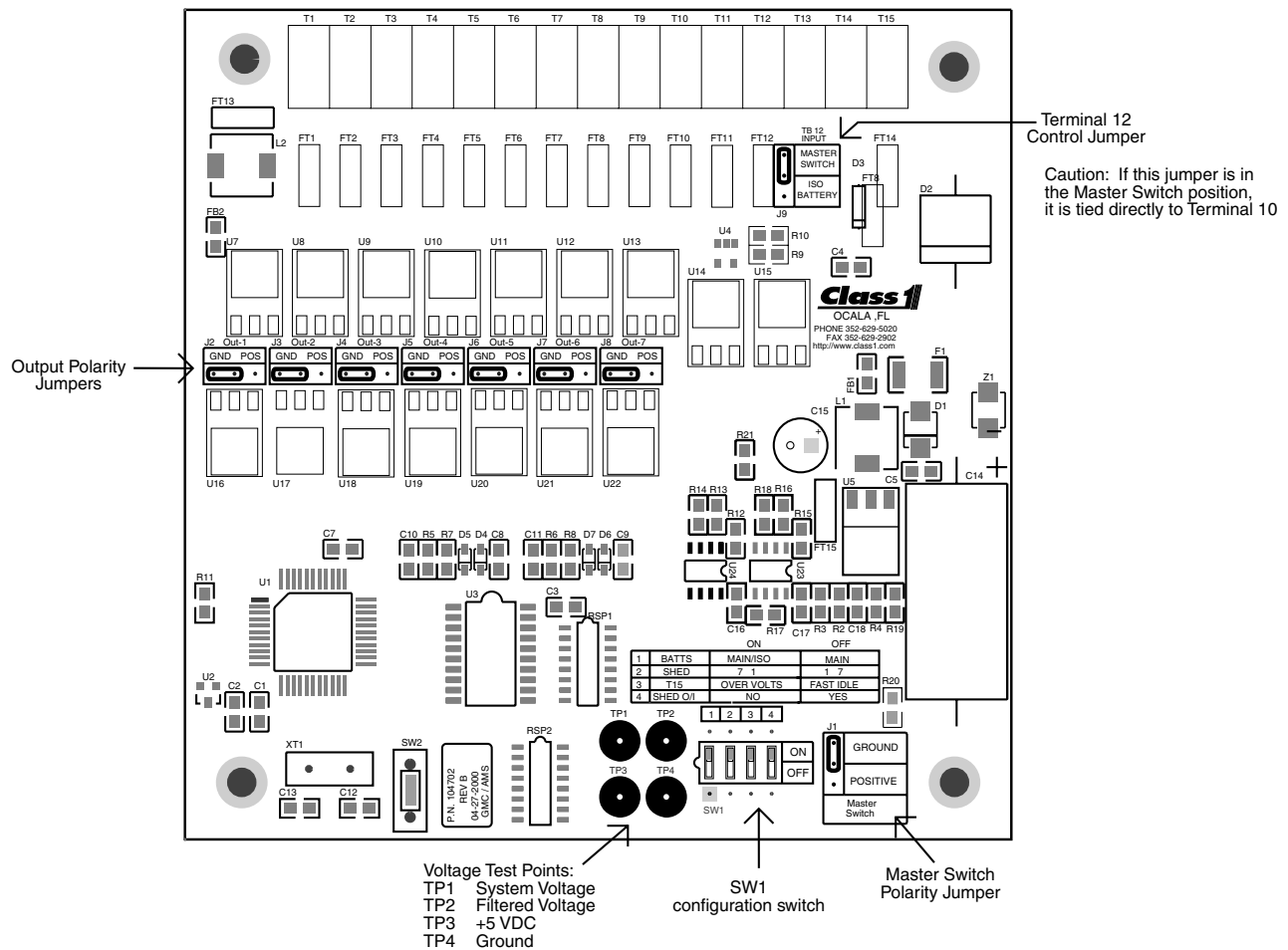


SAMPLE CIRCUITS



Automatic FAST IDLE CIRCUIT, disabled when service brake is applied

TROUBLESHOOTING



Visual check

Check jumpers J1-J9 and ensure that they are in the correct position for the application. Check switch SW1 that 1-4 are in the correct position for the operation desired.

Voltage Supply check

Check for system voltage between terminals T14 (ground) and T13 (12VDC). Check for system voltage between TP4 (ground) and TP2 (12 VDC). These should be within 0.5 VDC. Check for 5 VDC between TP4 and TP3 (+5 VDC).

These voltages must be present for the system to operate.

Master Switch check

Verify that J1 is in the proper position for the Master Switch you are using. Check for the input at T10.

This controls load sequencing on and off.

Load Manage Enable check

Check for a ground at T11.

This inputs allows loads to shed and the Fast Idle output.

Output Test

Verify that jumpers J2 through J8 are in the correct position. With power on and a Master switch input there should be either 12 VDC or Ground on T1 through T7 dependent on the the position of J2-J8.

NOTES

