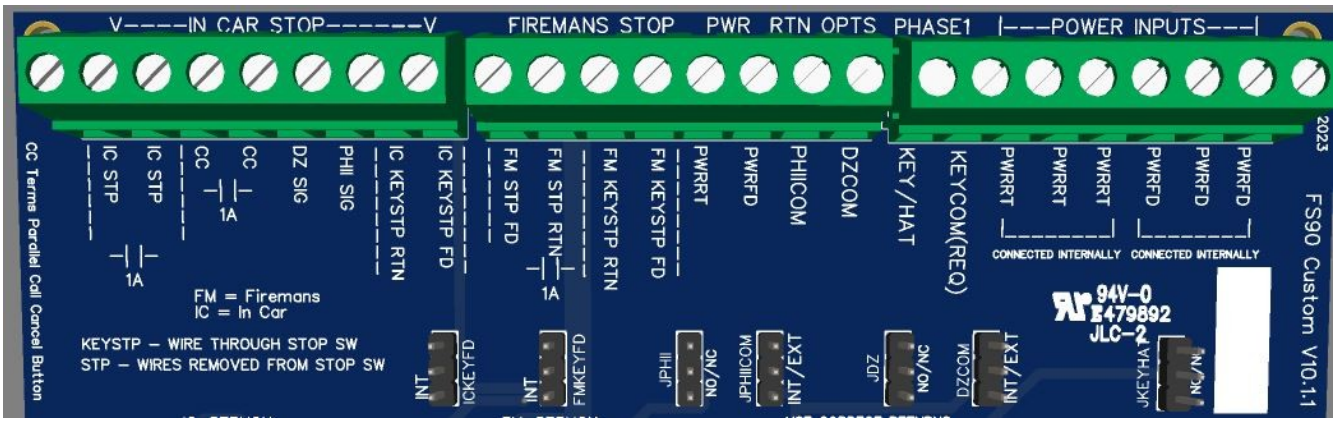
FS90 CUSTOM V10.1.1 Basic Wiring Examples.
Use correct connections for each individual system.

The custom board is ordered for an individual job. The main voltage to the PWR inputs should ideally be the same as the main voltage of your controller. The PHI signals (KEYHAT, DET1-3) , the PHII signal, and the DZ Signal may be 24vdc, or 110/120 ac/dc (possibly even other voltages), and may each use different returns, making the board very flexible.

STP = terminals = N/O Relay contact (**1A MAX**)
CC terminals = N/O Relay contact (**1A MAX**)

Terminals with FM designation are for the Firemans Stop Switch (FM KEYSTP for example)
Terminals with IC designation are for the In Car Stop Switch (IC KEYSTP for example)

On the V10.1 Custom board the jumpers act as follows:



KEYFD (IC or FM): This jumper connects the PWRFD terminal to the corresponding KEYSTP FD Terminal when on the INT side. The other side has no connection. This supplies PWRFD voltage to the stop switch. It may be removed if an alternate correct supply is used instead. On some installations, it may make sense to use a supply that is already hooked up to the IN CAR STOP switch, but care must be taken not to back feed this alternate feed with the PWRFD voltage. Removing this jumper removes the connection.

JPHII: This jumper reverses the state of the PHII input. If your PHII Key switch goes high in the on position use NO, if it goes low, use NC

* Changing the JPHII jumper to NC can be used to simulate having a good PHII signal. If you change it, and the FS90 starts to function, you may have no PHII signal. If you are sure you do, pull the jumper and see if you hear a relay click.

JPDZ: This jumper reverses the state of the DZ_SIG input. If your DZ input goes high in the on position use NO, if it goes low, use NC.

* Changing the JDZ jumper to NC can be used to simulate having a good DZ signal. If you change it, and the FS90 starts to function, you may have no DZ signal.

DZCOM This jumper completes a circuit that monitors the DZ_SIG input to PWRRT when set to INT, and DZCOM terminal when set to EXT. Note that this jumper **MUST** be set to ext if you are monitoring a DZ_SIG that uses a different return that PWRRT. Use DZCOM to provide the correct reference to DZ_SIG if it is not the same as your PWRRT.

PHIICOM This jumper completes a circuit that monitors the PHII_SIG input to PWRRT when set to INT, and DZCOM terminal when set to EXT. Note that this jumper **MUST** be set to ext if you are monitoring a PHII_SIG that uses a different return than PWRRT. Use PHIICOM terminal to provide the correct reference to PHII_SIG if it is not the same as your PWRRT.

JKEYHAT This jumper reverses the signal from your KEYHAT input. If you are monitoring a FireHat jewel or PHI Keyswitch, you would normally have it set to NO.

* Changing the JKEYHAT jumper to NC can be used to simulate having a good PHI signal. If you change it, and the FS90 starts to function, you probably have no PHI signal.

HOW IT WORKS

* If you correctly isolate and hook up your keyswitches, and return voltage to the KEYSTP RT terminals, the corresponding (IC or FM) STP contacts should be made any time the switch is in the made (ON) position.

* If one or both of the keyswitches are in the open (OFF) position, you must have a PHI signal (KEYHAT, DET1,DET2, or DET3), a PHI_SIG signal, and a DZ_SIG signal. These signals can go low or high, just use the jumpers to match the kind of signal you use (high = NO, low = NC).

The above signals should close the STP contacts with your stop switches in the OFF position, and close the CC contacts for your CALL CANCEL button.

* There is series of steps that you can use to isolate problems when installing.

1st, you must have a PHI signal, before the board will acknowledge that you have a PHII_SIG input.

2nd, the board must see PHI and PHII before the board will acknowledge that you have a DZ_SIG input. (This is why you don't hear the DZ relay picking and dropping on normal operation.

For test purposes you can sort of fake some of the inputs. For instance, if you had no PHI, PHII, or DZ inputs, you could change the corresponding output jumpers to the N/C side of each, and the board will think it has that signal.

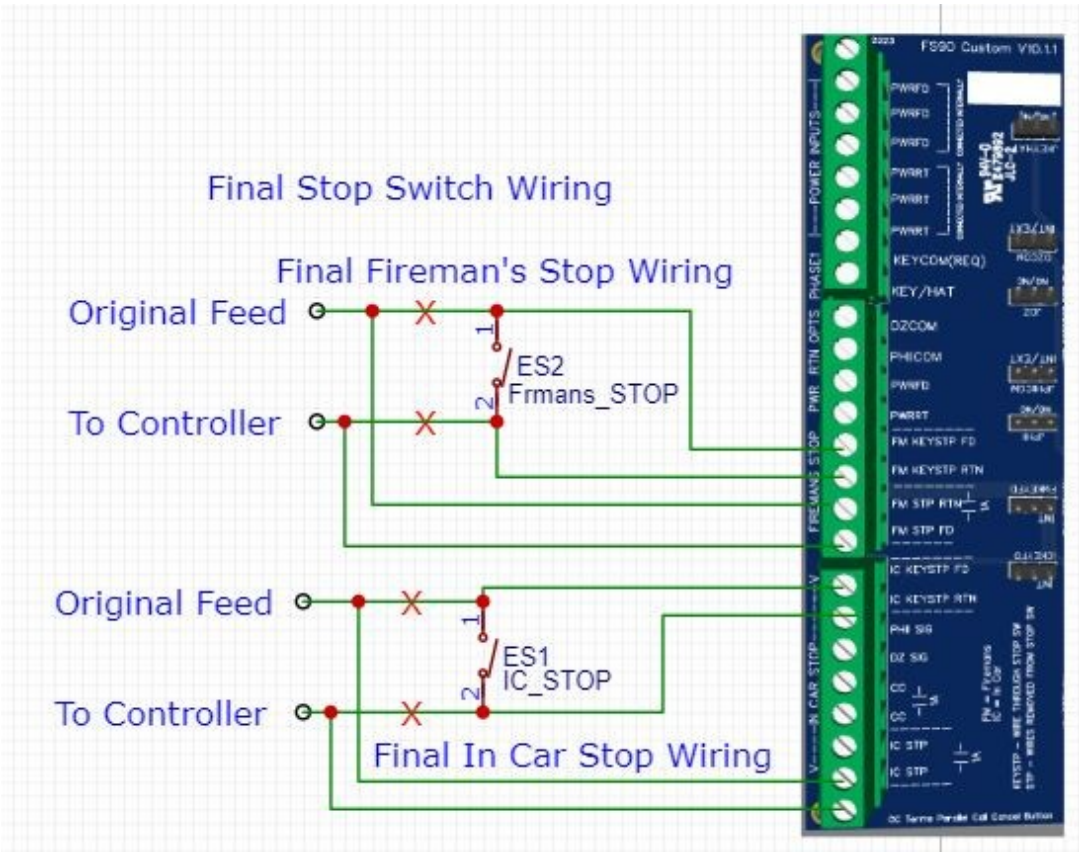
Lets say that you are using high inputs for each inputs, you could change one jumper at a time to NC and see if the board changes to FS90 operation. If it changes when you move a jumper, there is a good chance that your problem is with the input associated with that jumper. Start with KEYHAT, then PHII, then DZ. If the process starts to work, change back one at a time and see where it drops out.

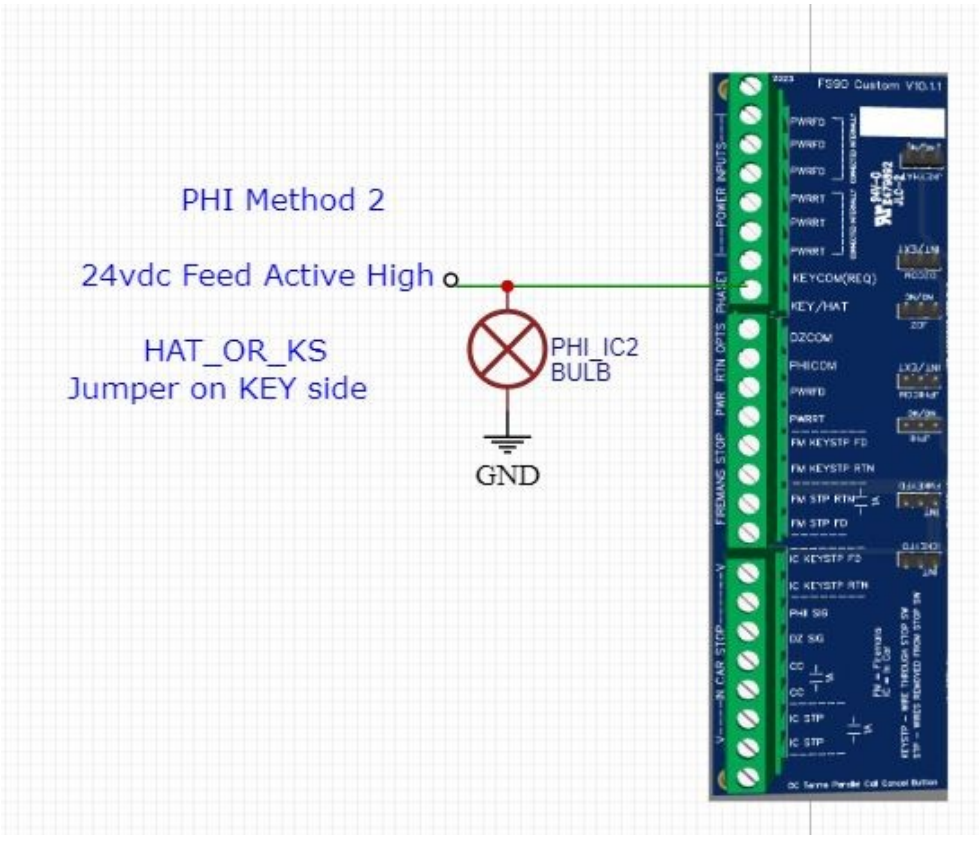
The board uses the "STPMON" relays to mirror the stop switches when on normal. The relays will be on whenever the keyswitches are on.

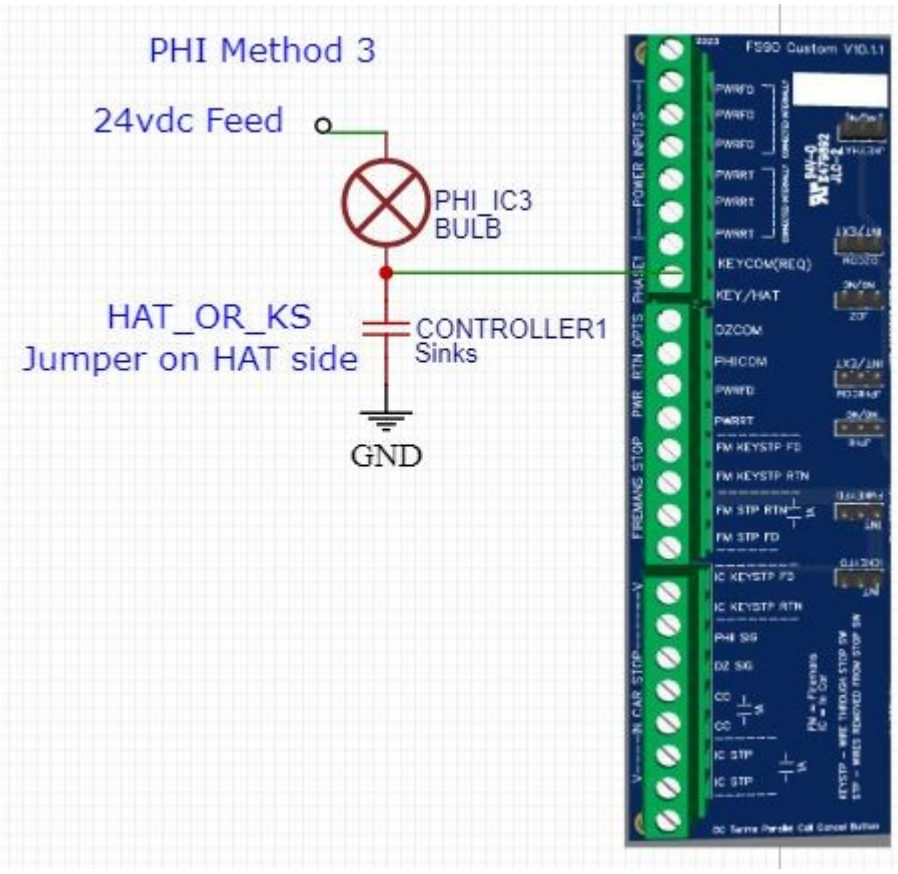
The board uses the "ALLOW" relays to close the 2 sets of STP and the CC contacts.

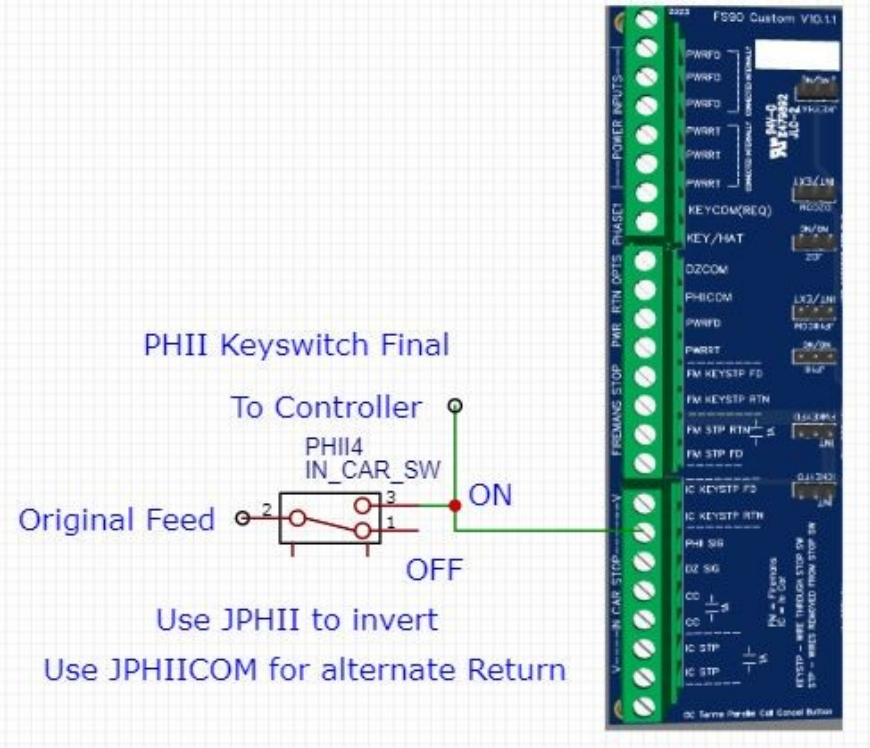
BE SURE TO RETURN THE JUMPERS TO THE CORRECT POSITIONS.

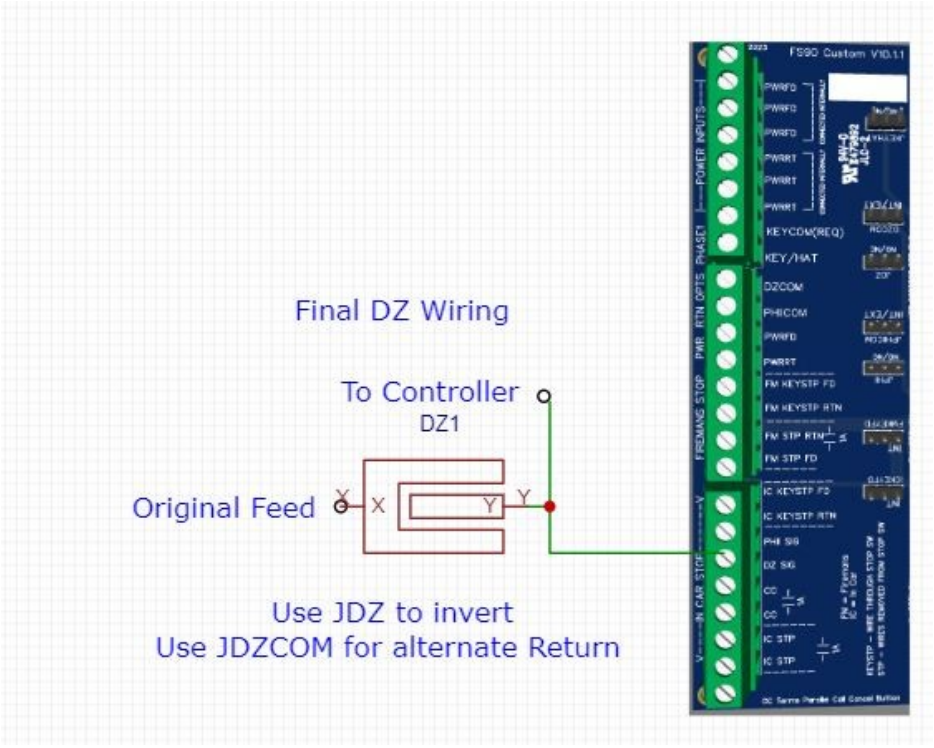
* NOTE: The auxiliary relay modules shown in the examples below are 24vdc. Use the correct voltage for your circuit.

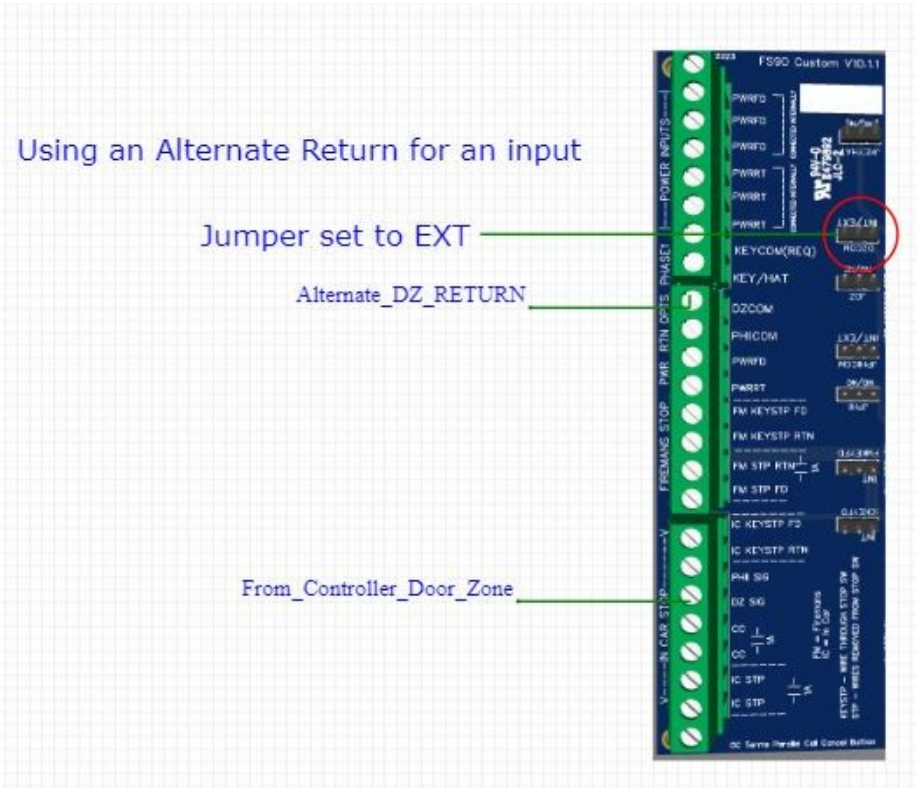




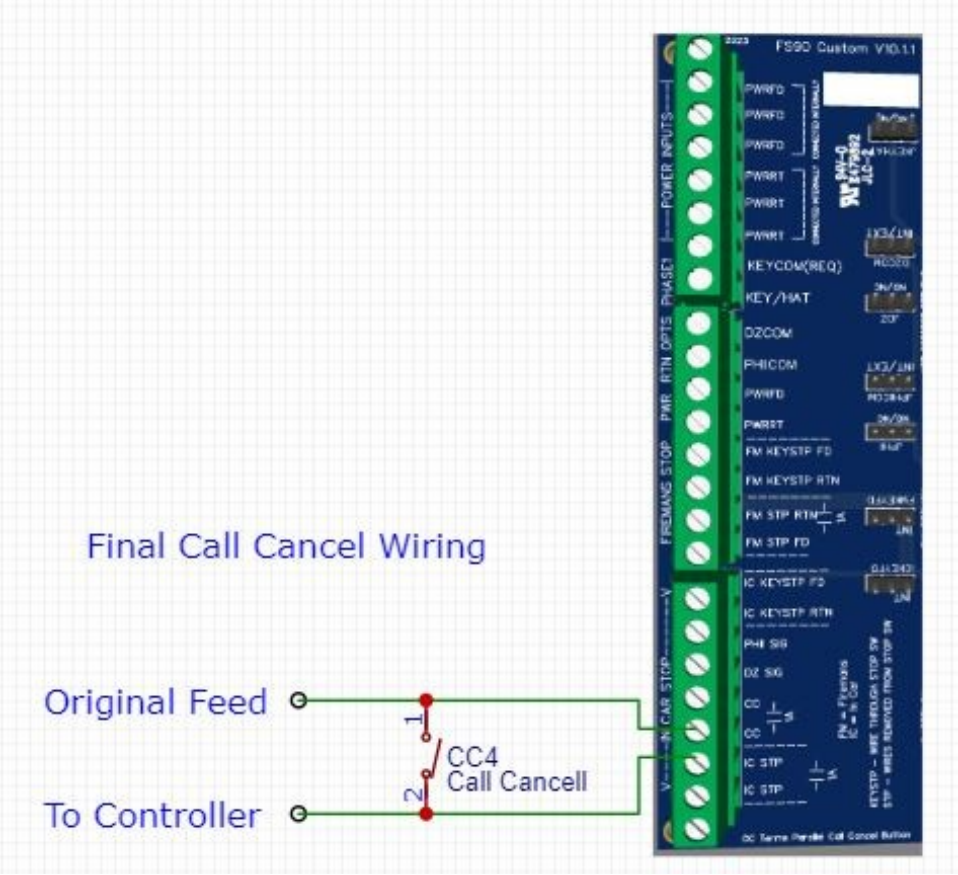

PHI Method 3
24vdc Feed
PHI_IC3
BULB
HAT_OR_KS
Jumper on HAT side
CONTROLLER1
Sinks
GND
FS90 Custom V10.11
POWER INPUTS
PHASE1
PWR RTN OPTS
FREMANS STOP
IN CAR STOP
KEYCOM(REQ)
KEY/HAT
DZCOM
PHICOM
PWRD
PWRT
FM KEYSTP FD
FM KEYSTP RTN
FM STP RTN
FM STP FD
IC KEYSTP FD
IC KEYSTP RTN
PHI SIG
DZ SIG
IC STP

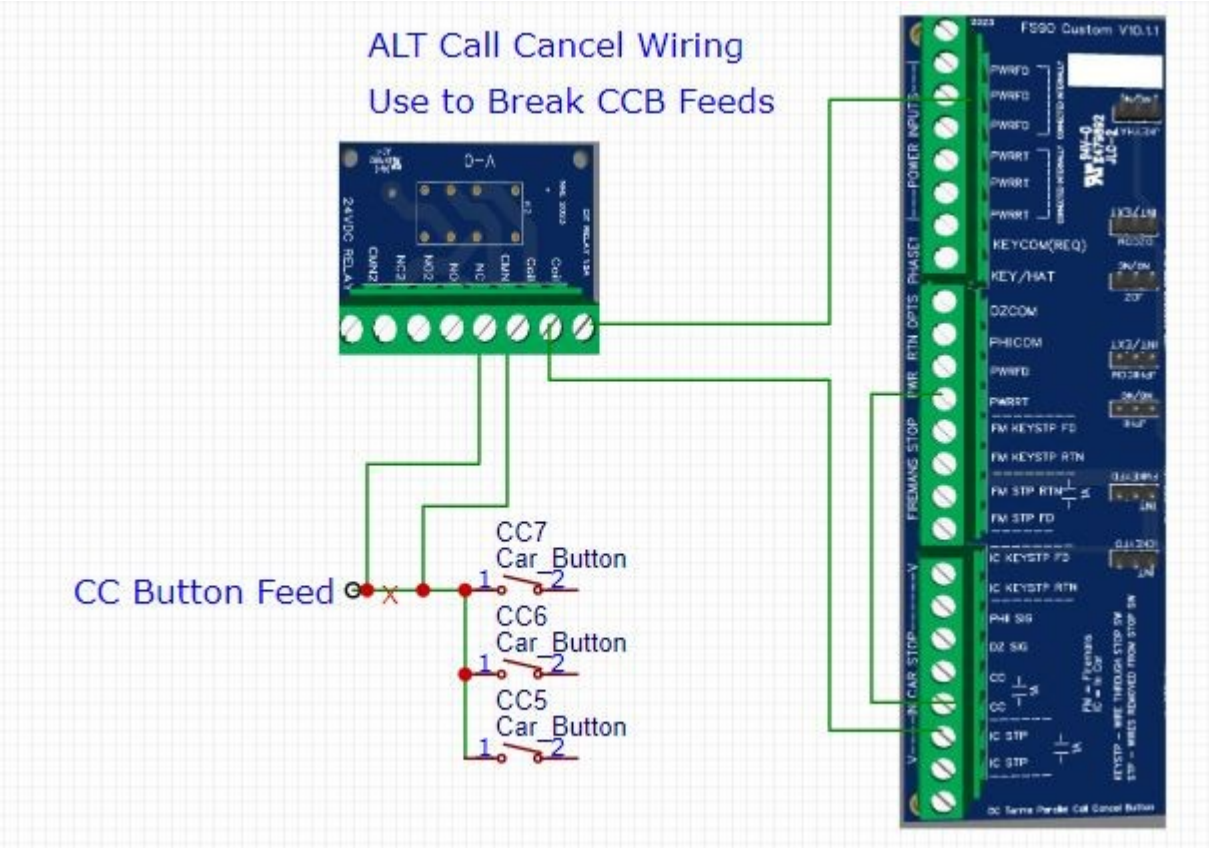

PHII Keyswitch Final
To Controller
PHII4
IN_CAR_SW
Original Feed
ON
OFF
Use JPHII to invert
Use JPHIICOM for alternate Return
FS90 Custom V10.11
POWER INPUTS
PHASE1
PWR RTN OPTS
FREMANS STOP
IN CAR STOP
KEYCOM(REQ)
KEY/HAT
DZCOM
PHICOM
PWRD
PWRT
FM KEYSTP FD
FM KEYSTP RTN
FM STP RTN
FM STP FD
IC KEYSTP FD
IC KEYSTP RTN
PHI SIG
DZ SIG
IC STP


Final DZ Wiring
To Controller
DZ1
Original Feed
X
X
Y
Y
Use JDZ to invert
Use JDZCOM for alternate Return
FS90 Custom V10.11
POWER INPUTS
PWRFD
PWRFD
PWRFD
PWRRT
PWRRT
PWRRT
KEYCOM(REQ)
KEY/HAT
PHASE1
DZCOM
PHICOM
PWRFD
PWRRT
PWR RTN OPTS
FM KEYSTP FD
FM KEYSTP RTN
FM STP RTN
FM STP FD
FRONT/REAR STOP
IC KEYSTP F2
IC KEYSTP RTN
PHI SIG
DZ SIG
CC
CC
IC STP
IC STP
V-----IN CAR STOP-----V


Using an Alternate Return for an input
Jumper set to EXT
Alternate_DZ_RETURN
From_Controller_Door_Zone
FS90 Custom V10.11
POWER INPUTS
PWRFD
PWRFD
PWRFD
PWRRT
PWRRT
PWRRT
KEYCOM(REQ)
KEY/HAT
PHASE1
DZCOM
PHICOM
PWRFD
PWRRT
PWR RTN OPTS
FM KEYSTP FD
FM KEYSTP RTN
FM STP RTN
FM STP FD
FRONT/REAR STOP
IC KEYSTP F2
IC KEYSTP RTN
PHI SIG
DZ SIG
CC
CC
IC STP
IC STP
V-----IN CAR STOP-----V

Most inputs can be totally isolated by using the INT/EXT jumper for that input. EXT connects the COM terminal for that input to the return for that input. In the above example, the DZ_SIG input connects to one side of the DZ monitoring coil, and the other side connects to DZCOM terminal (there may be other logic in the circuit, so you may not read continuity at all times.)





If holding the call cancel button during phase II operation interferes with PHII, you may need to use the above method of keeping the car from accepting calls.