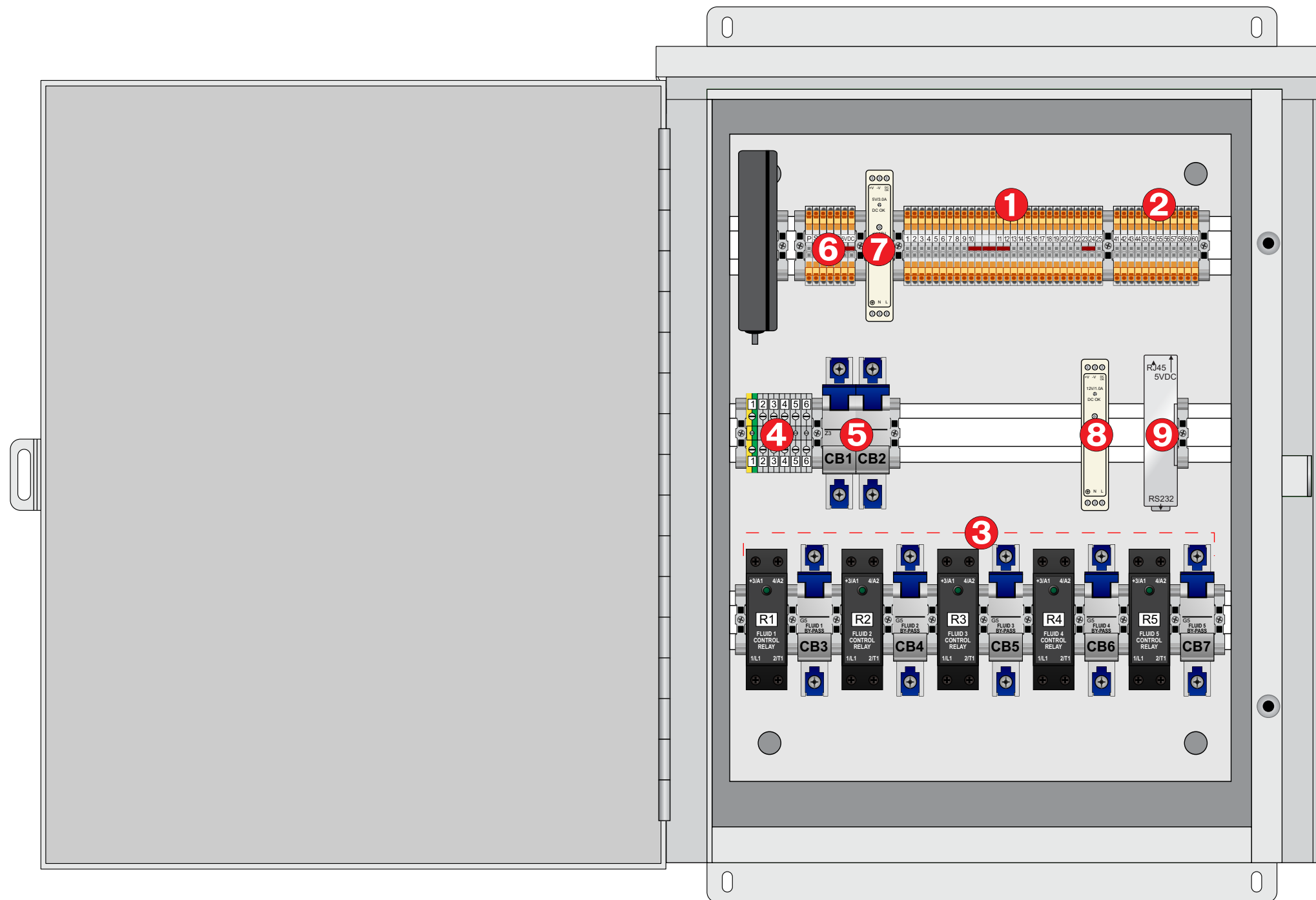
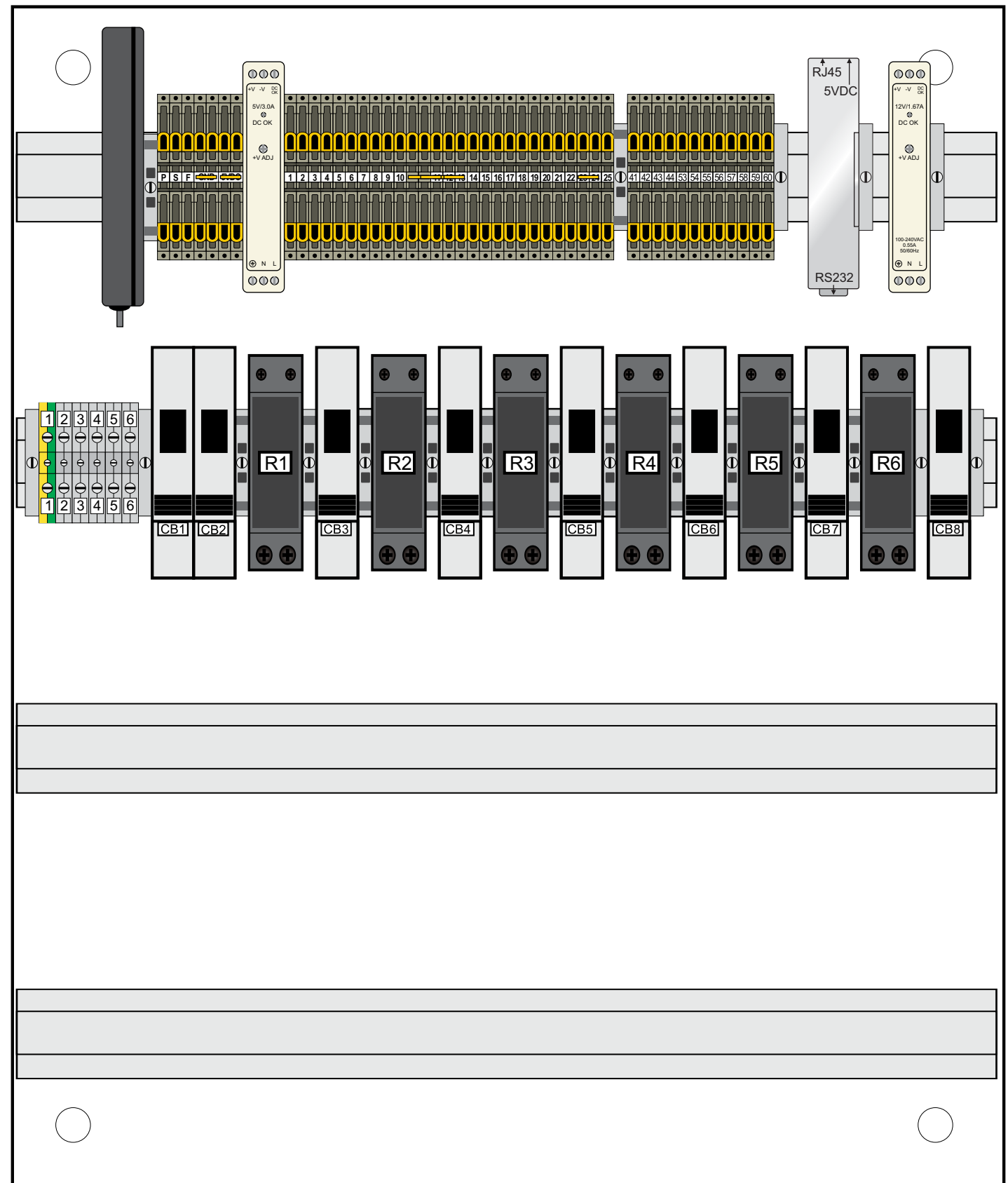


FLEETWATCH®
Fluid Management System
Wiring Diagrams

Drawing Index	
Drawing Number	Description
FWD100	Typical JB20 RIH Junction Box Layout Diagram
FWD110	JB20 RIH Junction Box Wiring Worksheet
FWD120	External Power To RIH Junction Box Diagram
FWD130	Solenoid Valve Internal Wiring To RIH Junction Box Diagram (Providing Power to Valve)
FWD140	Solenoid Valve Internal Wiring To RIH Junction Box Diagram (Breaking Power to Valve)
FWD150	Mechanical Pulse Meter Internal Wiring To RIH Junction Box Diagram
FWD160	Solid State Pulse Meter Internal Wiring To RIH Junction Box Diagram
FWD170	SRF55 Internal Wiring To RIH Junction Box Diagram
FWD180	SRF55 Location Guide
FWD190	SRF55 RIH Junction Box Wiring Diagram
FWD200	FR55 Internal Wiring To RIH Junction Box Diagram
FWD210	FR55 Master with One Slave Internal Wiring
FWD220	FR55 Master with Two Slaves Internal Wiring
FWD230	FR55 Location Guide
FWD240	FR55 Equipment Detail
FWD250	HA55-JBHA Internal Wiring To RIH Junction Box Diagram (HA55 ONLY - NO FR55)
FWD260	HA55-JBHA Internal Wiring To RIH Junction Box Diagram (FR55 & HA55)
FWD270	RIH Communications Wiring Diagram (Device Master To RIH Junction Box)
FWD280	RIH Communications Wiring Diagram (Device Master To RIH Junction Box with Optical Isolators)



- 1 RIH/FRM Communications Connections
- 2 RF Receiver Connections
- 3 Solenoid Valve Relays/Circuit Breakers
- 4 Power Terminals
- 5 Main Power Circuit Breakers
- 6 Vehicle Detector Terminals
- 7 5V Power Supply (for Vehicle Detector and/or Single Port Device Master)
- 8 12V Power Supply (for RIH3000RS, 2 Port Device Master, Solid State Pulser, or FR Master/Slave Setup)
- 9 Device Master Serial to Ethernet Convertor



RIH/FRM Connections (Top Row) 1

Pos	Typical Input	Field Wire Color/Flow
1	System Controller Tx	
2	System Controller Rx	
3	System Controller Gnd	
4	Comm 1 Tx	
5	Comm 1 Rx	
6	Comm 1 Gnd	
7	Comm 2 Tx	
8	Comm 2 Rx	
9	Comm 2 Gnd	
10	Pulser Iso Gnd	
	Pulser Iso Gnd	
	Pulser Iso Gnd	
11	Pulser Iso Gnd	
12	Pulser Iso Gnd	
13	Pulser Input 0	
14	Pulser Input 1	
15	Pulser Input 2	
16	Pulser Input 3	
17	Pulser Input 4	
18	Pulser Input 5	
19	Pulser Input 6	
20	Pulser Input 7	
21	Pulser Input 8	
22	Pulser Input 9	
23	Flow Reset Gnd (Veh Det. -)	
24	Flow Reset Gnd (Veh Det. -)	
25	Flow Reset 0 (Veh Det. +)	
26	Flow Reset 1	
27	Flow Reset 2	
28	Flow Reset 3	
29	Flow Reset 4	
30	Flow Reset 5	
31	Flow Reset 6	
32	Flow Reset 7	
33	FRM Go Signal	
34	FRM Go Gnd	
35	Spare I/O 1	
36	Spare I/O 2	
37	Spare I/O 3	
38	Contention Gnd	
39	Contention A	
40	Contention B	

Receiver Connections (Middle Row Right) 2

41	FR/HA-55 Gnd	(Black)	
42	FR/HA-55 Pwr +12v	(Brown)	
43	FR/HA-55 Tx	(Red)	
44	FR/HA-55 Rx	(Blue)	
53	HA-392 Gnd	(Black)	
54	HA-392 Pwr +12v	(Brown)	
55	HA-392 Tx	(Red)	
56	HA-392 Rx	(Blue)	
57	HA Switch Out	(Green)	
58	HA Switch In	(White)	
59	HA Red LED	(Orange)	
60	HA Green LED	(Yellow)	

Relays/Circuit Breakers (Bottom Row) 3

Used	Circuit Breaker/Relay	Wire Color	Fluid/Solenoid	Controlled
<input type="checkbox"/>	R1 Solenoid 1 control			
<input type="checkbox"/>	CB3 Solenoid 1 bypass			
<input type="checkbox"/>	R2 Solenoid 2 control			
<input type="checkbox"/>	CB4 Solenoid 2 bypass			
<input type="checkbox"/>	R3 Solenoid 3 control			
<input type="checkbox"/>	CB5 Solenoid 3 bypass			
<input type="checkbox"/>	R4 Solenoid 4 control			
<input type="checkbox"/>	CB6 Solenoid 4 bypass			
<input type="checkbox"/>	R5 Solenoid 5 control			
<input type="checkbox"/>	CB7 Solenoid 5 bypass			
<input type="checkbox"/>	R6 Solenoid 2 control			
<input type="checkbox"/>	CB8 Solenoid 2 bypass			
<input type="checkbox"/>	R7 Solenoid 3 control			
<input type="checkbox"/>	CB9 Solenoid 3 bypass			
<input type="checkbox"/>	R8 Solenoid 4 control			
<input type="checkbox"/>	CB10 Solenoid 4 bypass			
<input type="checkbox"/>	R9 Solenoid 5 control			
<input type="checkbox"/>	CB11 Solenoid 5 bypass			

Power Block (Second Row Left) 4

Typical Inputs	Typical Wire Color
1 Earth Ground	Green
2 120vac Hot (RIH Circuit)	Black
3 120vac Neutral (RIH Circuit)	White
4 120vac Hot (Solenoid Valve Circuit)	Black
5 120vac Neutral (Solenoid Valve Circuit)	White
6 120vac Hot (Vehicle Detector Power)	Black

Main Power Circuit Breakers (Second Row) 5

Used	Circuit Breaker/Relay	Wire Color	Fed From (Elec. Panel)
<input type="checkbox"/>	CB1 RIH Circuit	Black	
<input type="checkbox"/>	CB2 Solenoid Circuit	Red	

Vehicle Detector Block (Top Row Left) 6

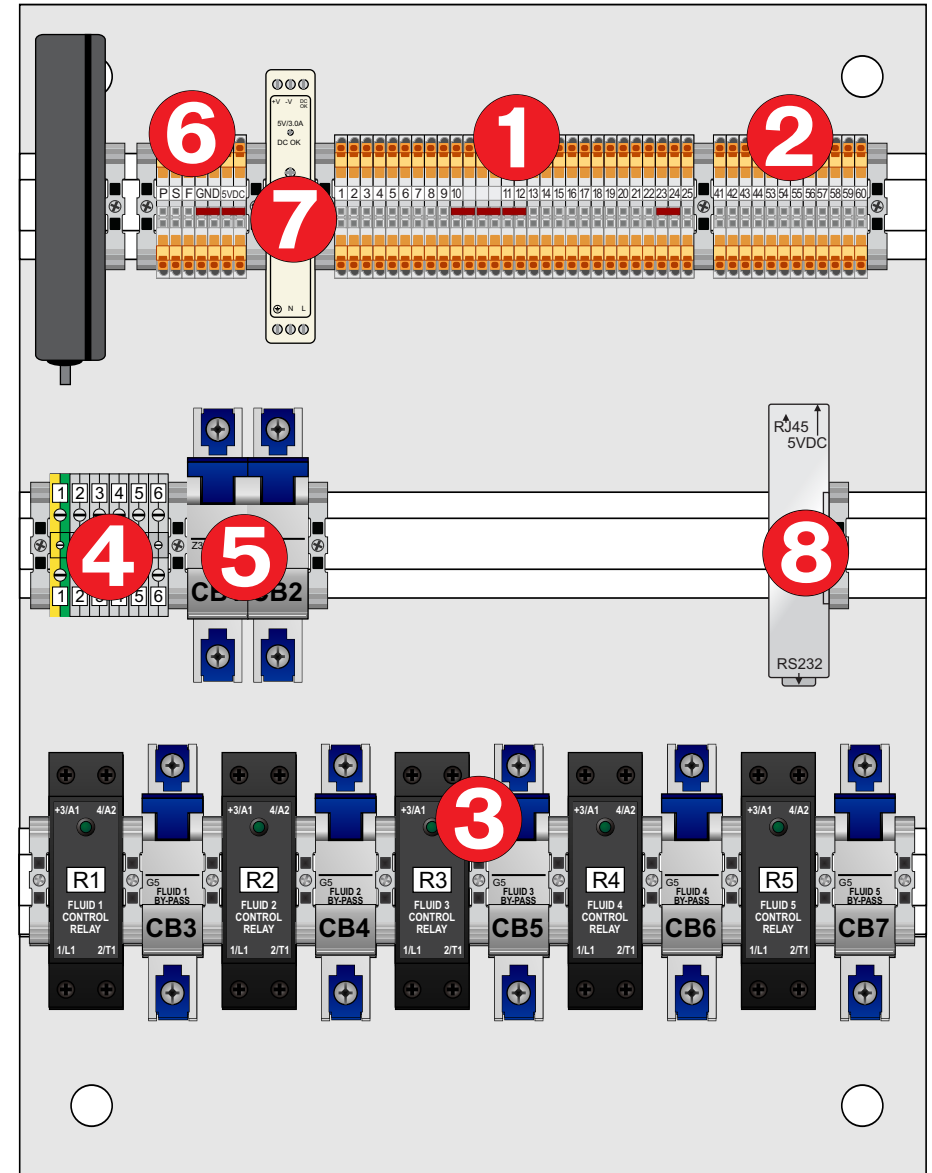
Typical Inputs	Typical Wire Color
1 Power (to SRF Vehicle Detector Sensor)	Red
2 Signal	White
3 Floor set	Green
4 Ground	Black
5 Ground	Black
6 +5VDC	Brown
7 +5VDC	Brown

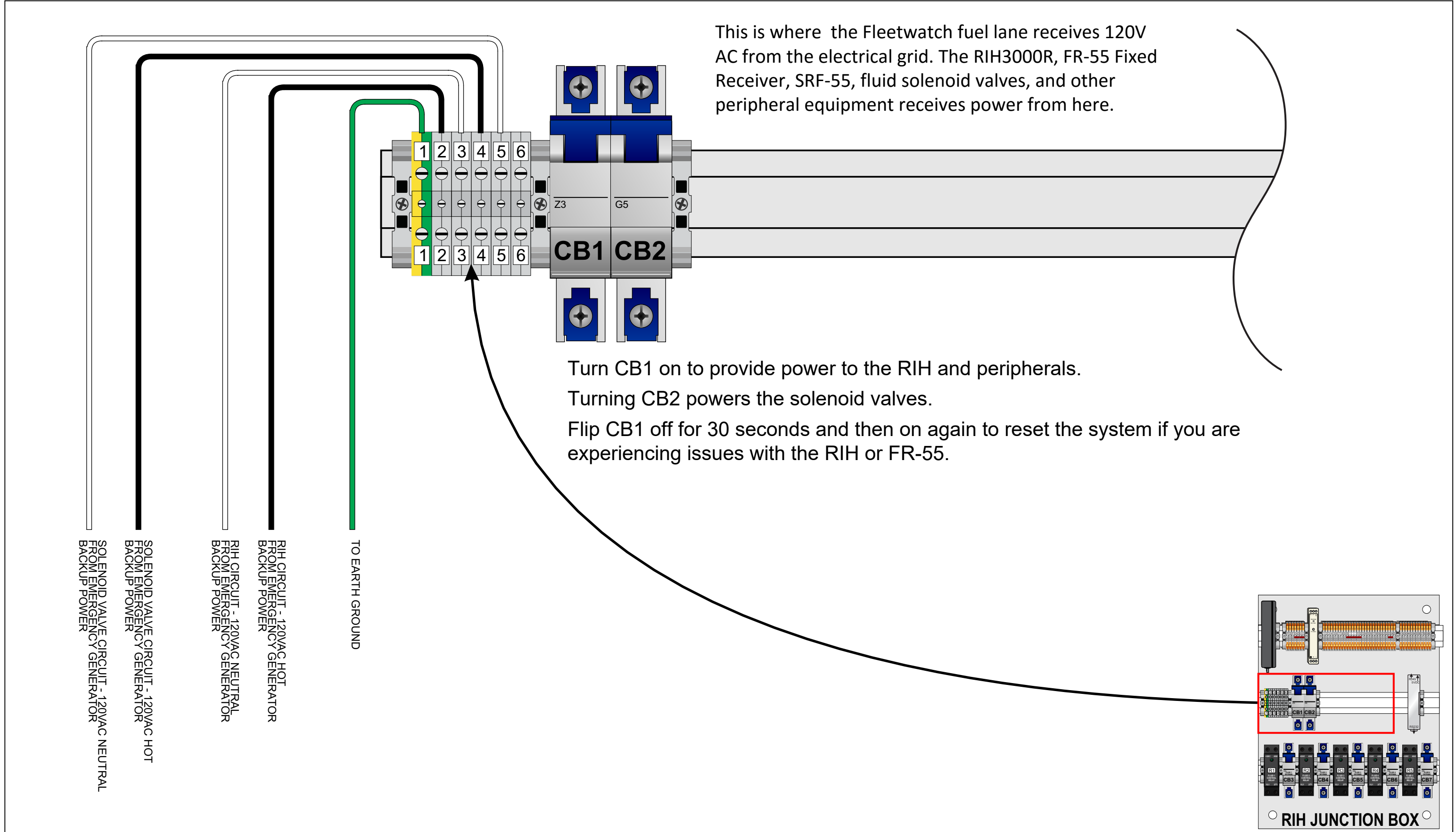
Vehicle Detector Power Supply (Top Row Left) 7

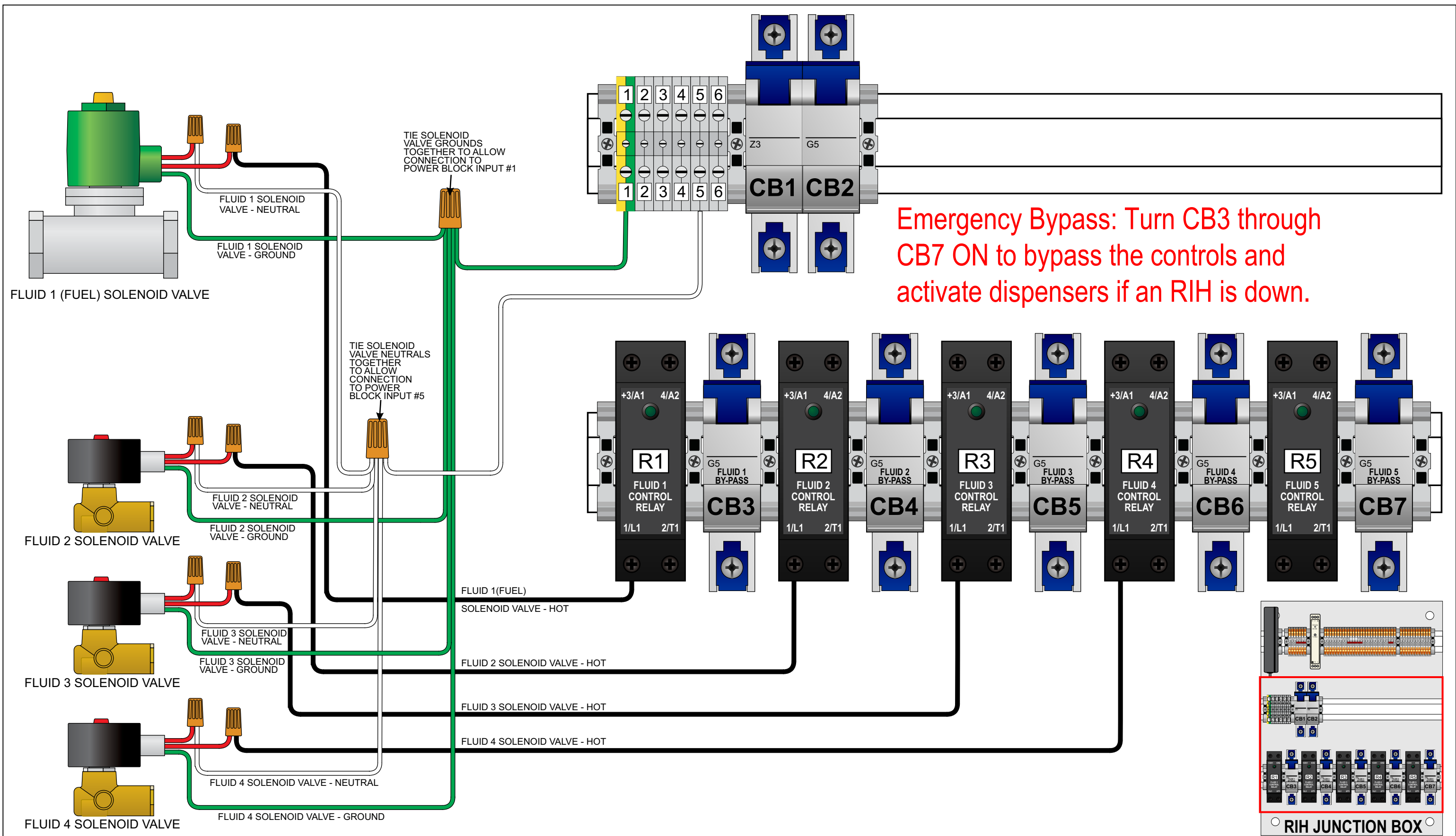
Vehicle Detector Power Supply	Typical Wire Color
+V Power (+5VDC)	Brown
-V Ground	Black
DC OK N/A	N/A
GND Ground (Earth Ground)	Green
N Neutral (120 VAC)	White
L Hot (120 VAC - from #6 on power block [4])	Black

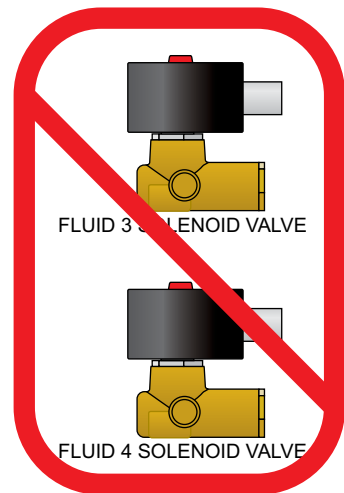
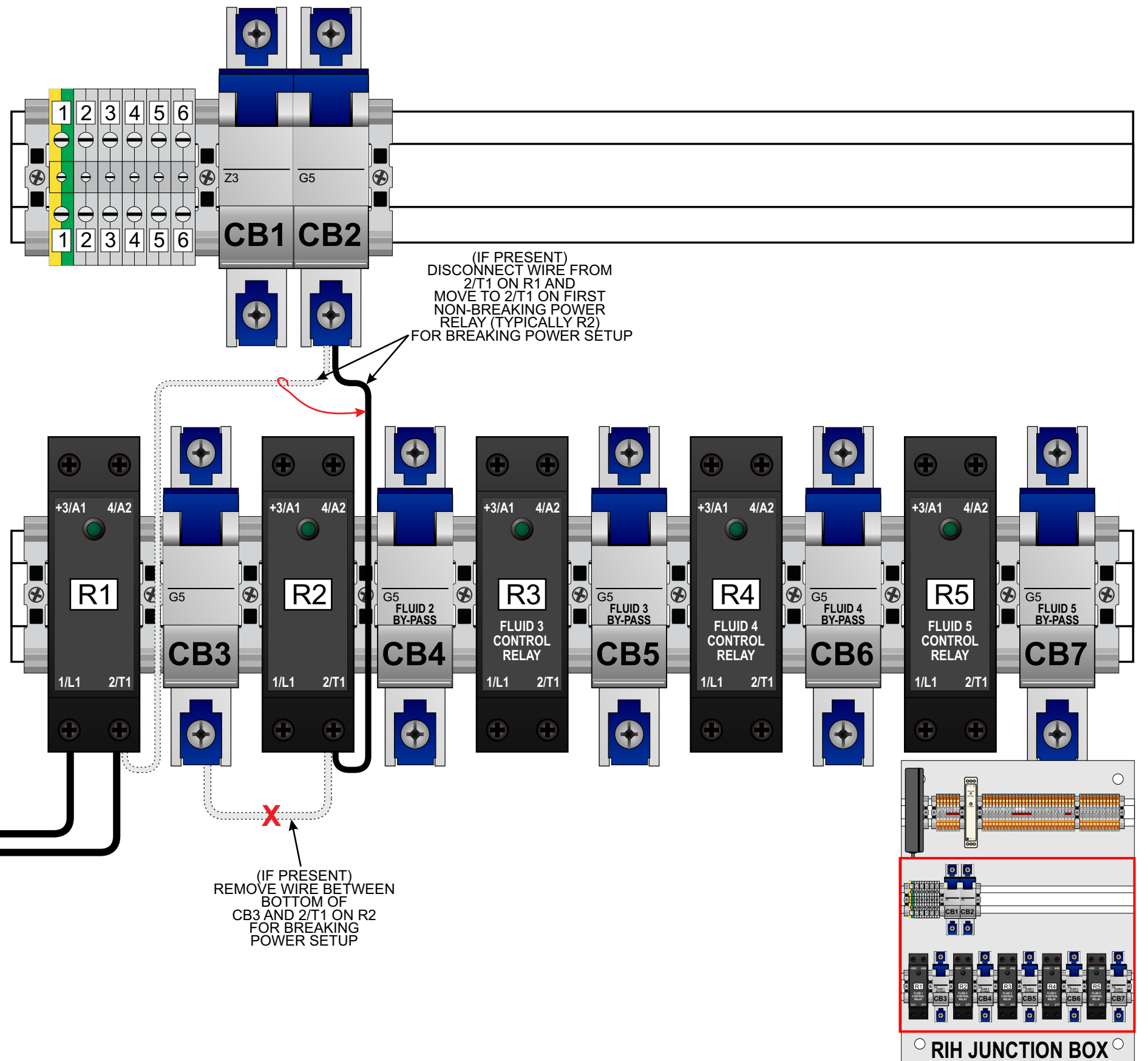
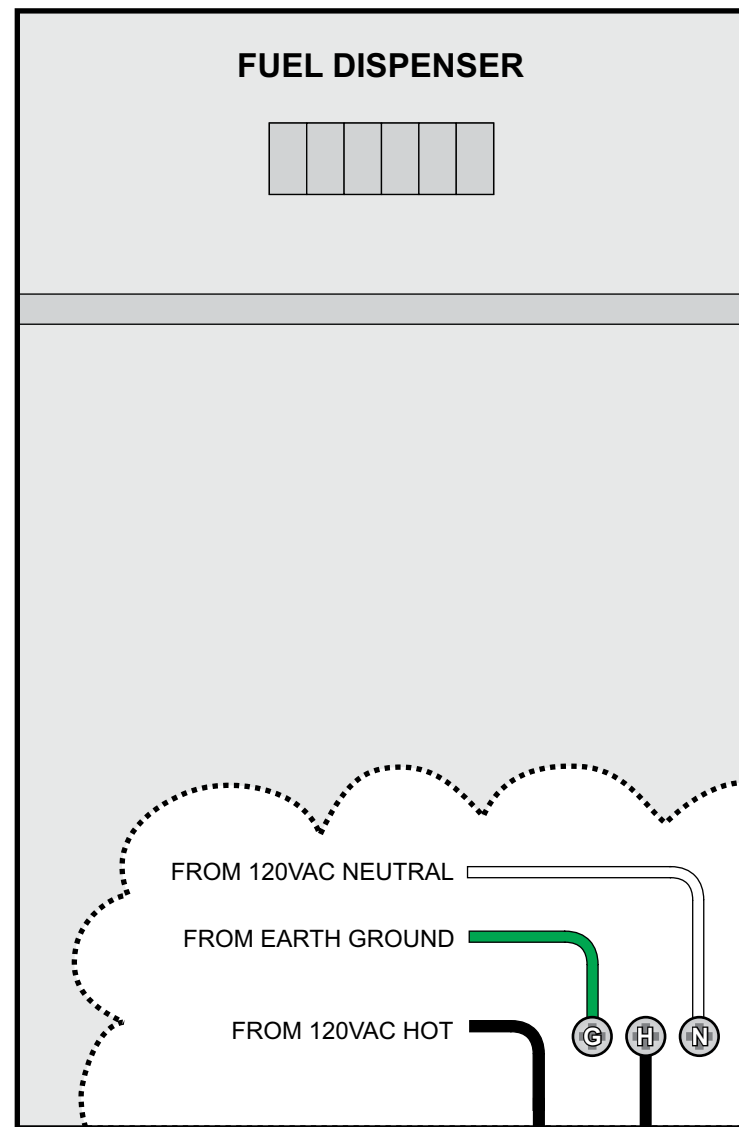
Device Master (Second Row Right) 8

<input type="checkbox"/>	IP Address	
<input type="checkbox"/>	Subnet Mask	
<input type="checkbox"/>	Gateway Address	









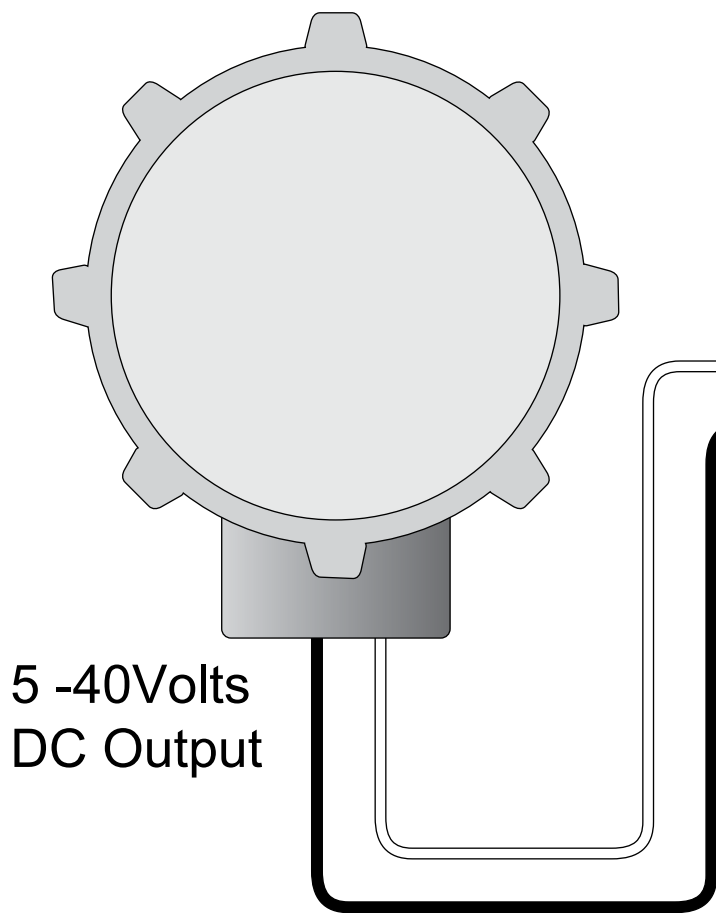
**NON-FUEL
SOLENOID
VALVES ARE
NOT TYPICALLY
CONNECTED IN
THIS MANNER**

FLEETWATCH RELAY
BREAKS 120VAC HOT
FROM DISPENSER

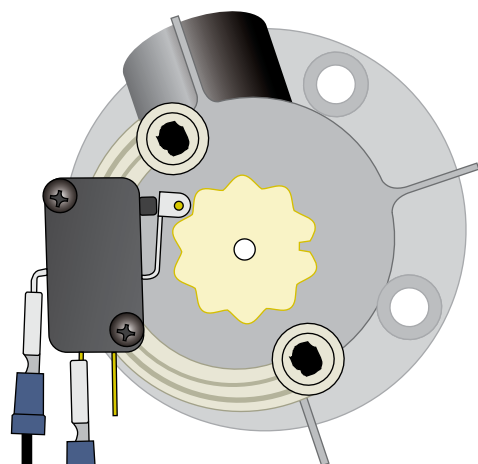
Troubleshooting Tip

A mechanical pulser usually has a microswitch activated by a gear that rotates when fuel is dispensing. If this gear or switch are broken, the RIH will receive zero fuel amounts or partial amounts. The gear should spin smoothly and the switch should click as the gear rotates. Also, check the wiring on the pulser for proper connectivity.

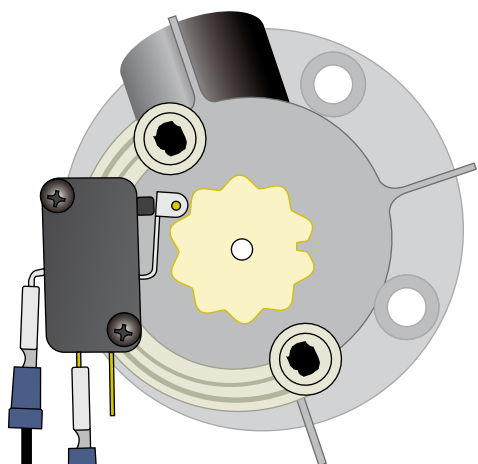
Typical Fuel Pulse Meter



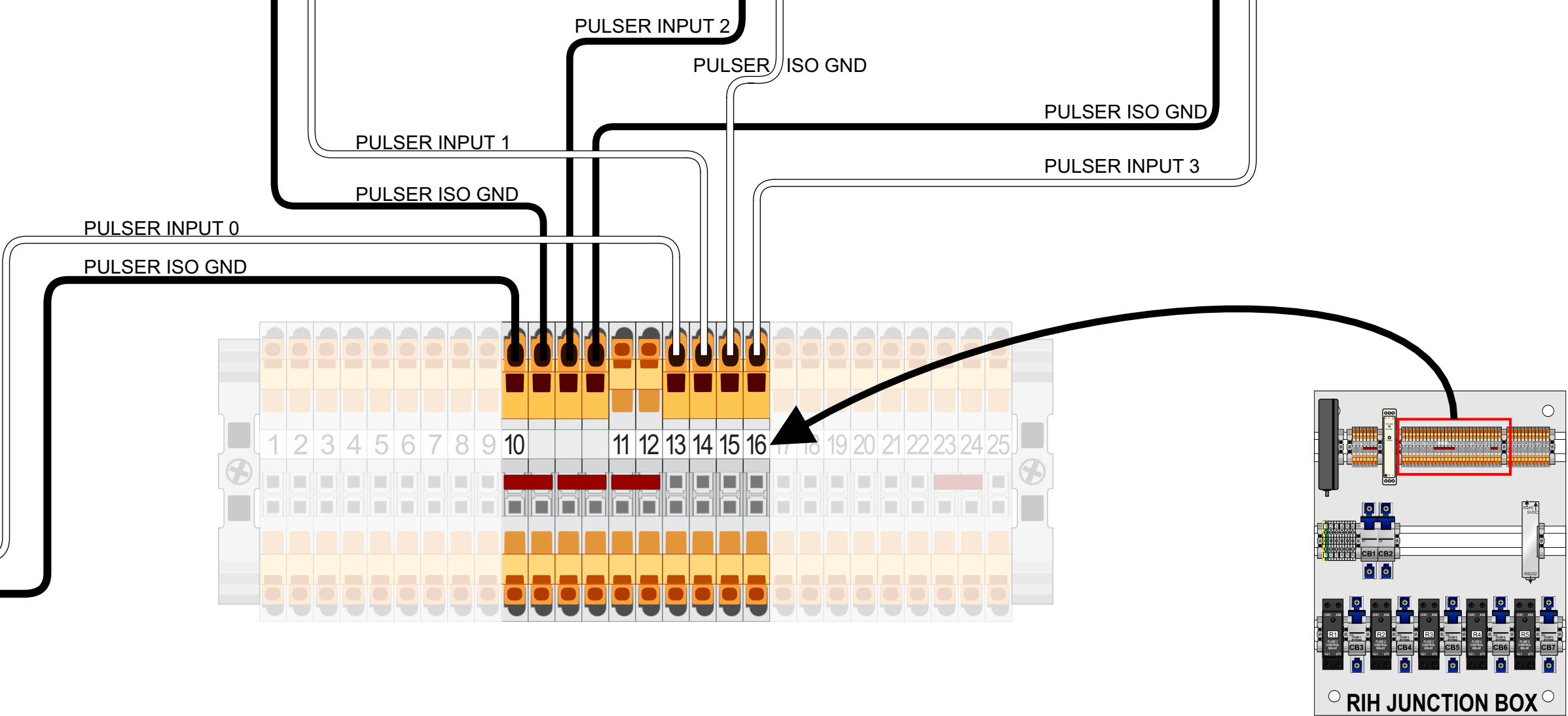
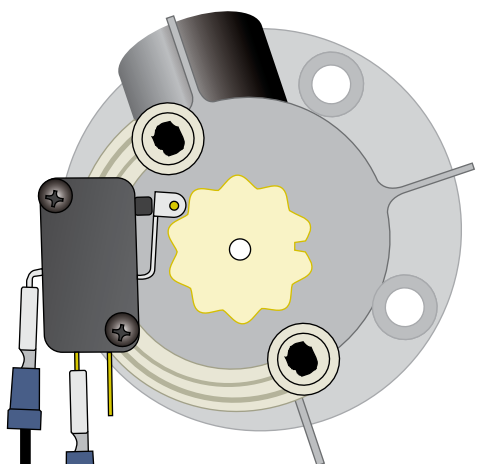
Typical Oil Pulse Meter

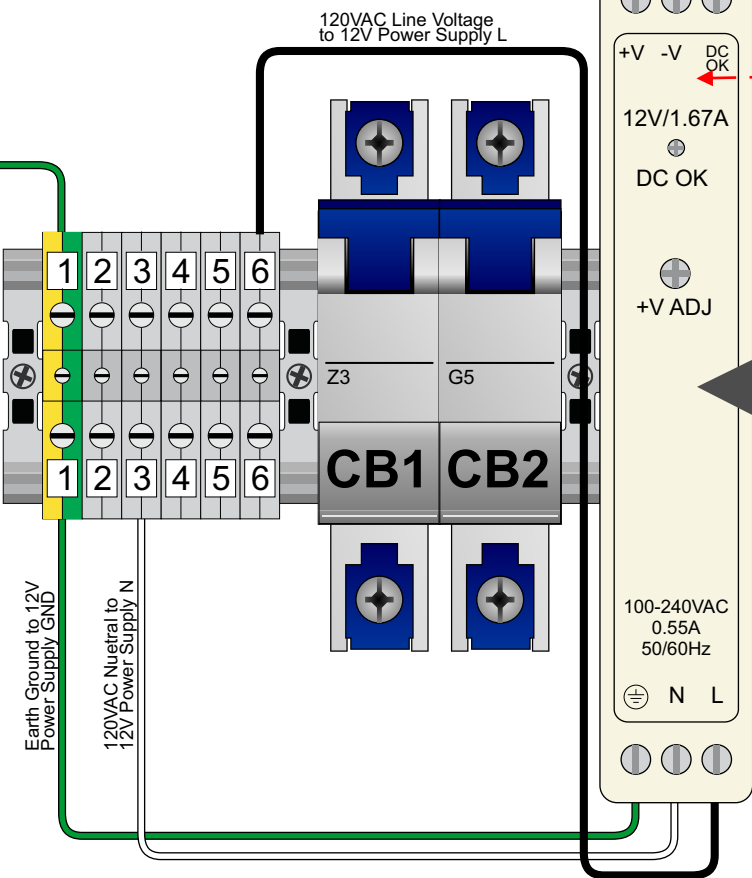
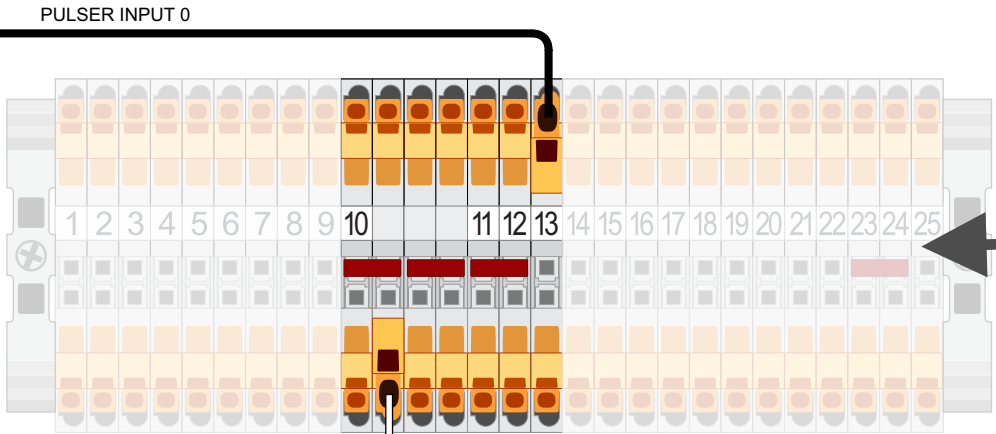
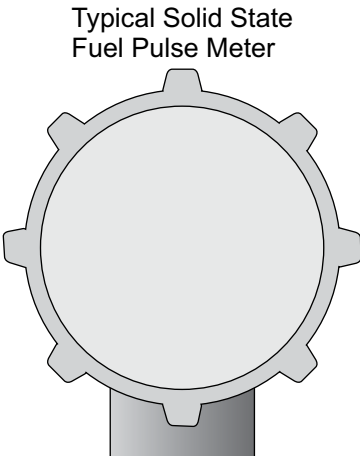


Typical Coolant Pulse Meter

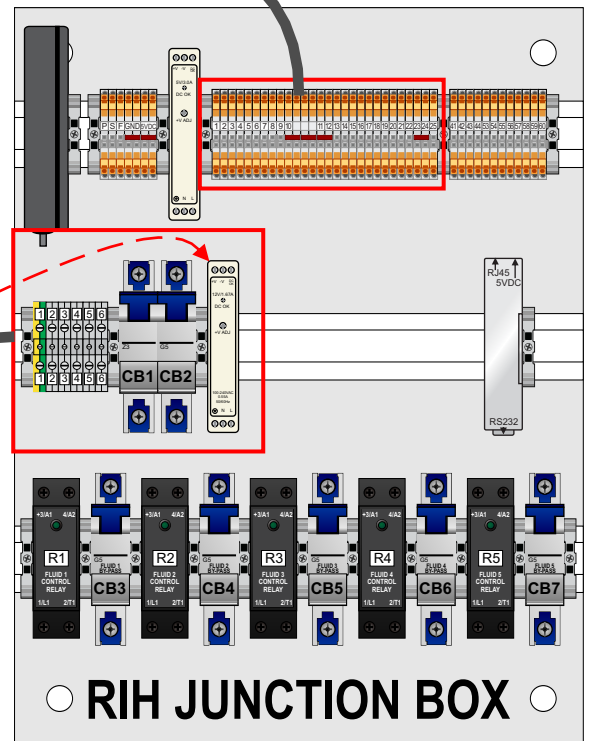


Typical ATF Pulse Meter





Mount 12V power supply on center rail next to CB2



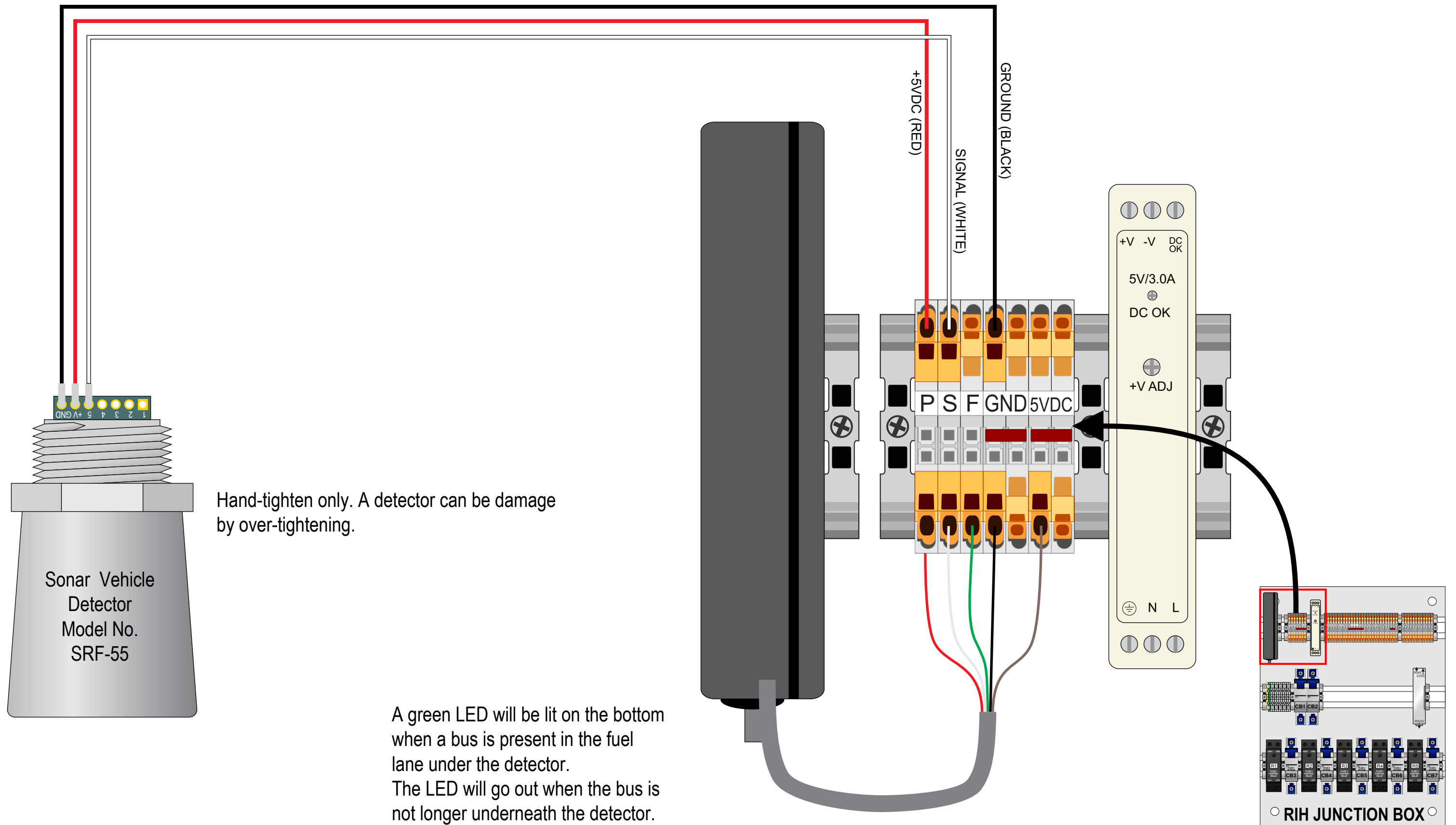
SA SYSTEMS, INC.

3939 East 19th Street, Rockwell, NJ 07866-2515 908-251-3353

FLEETWATCH FMS
WIRING DIAGRAMS

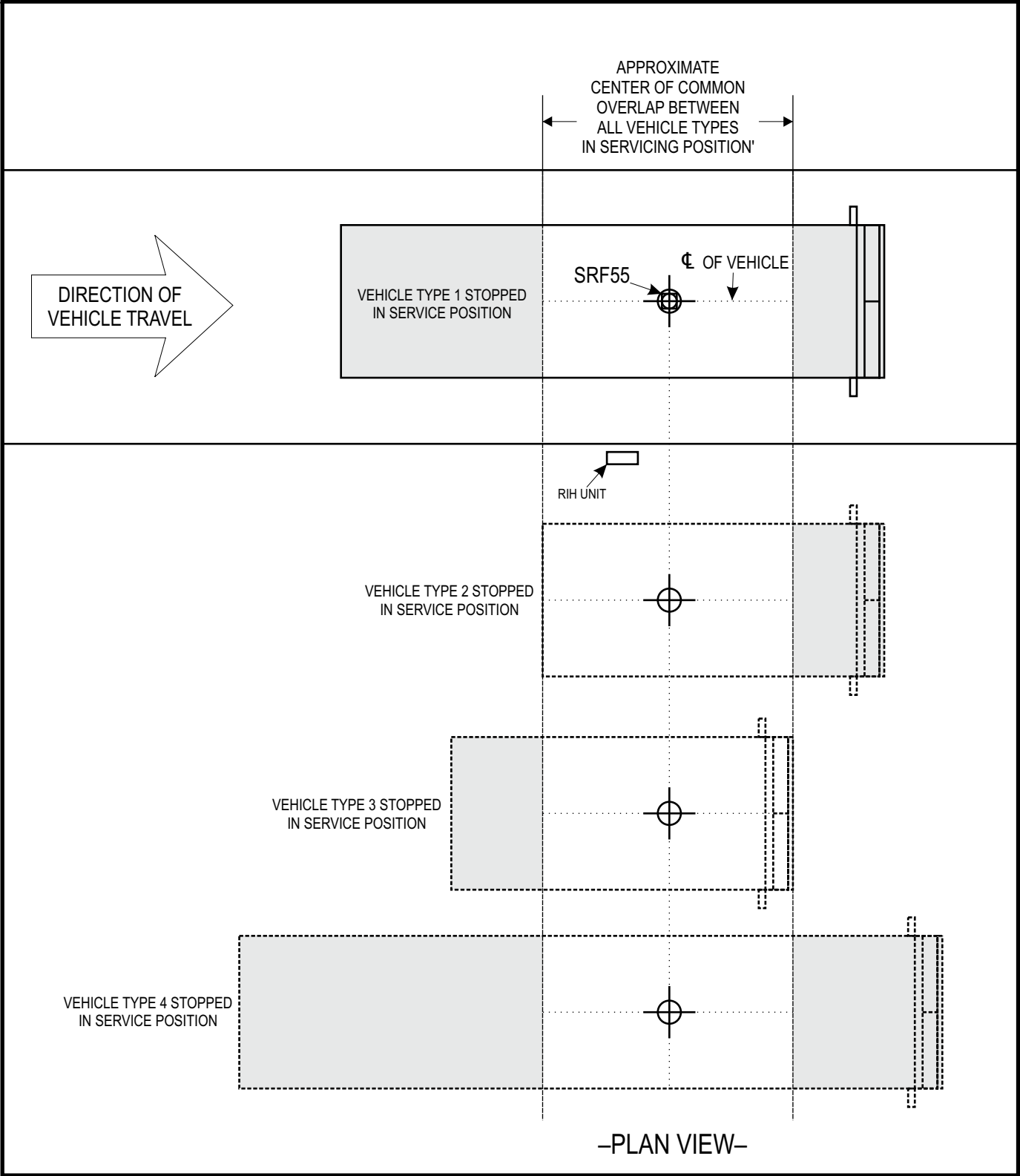
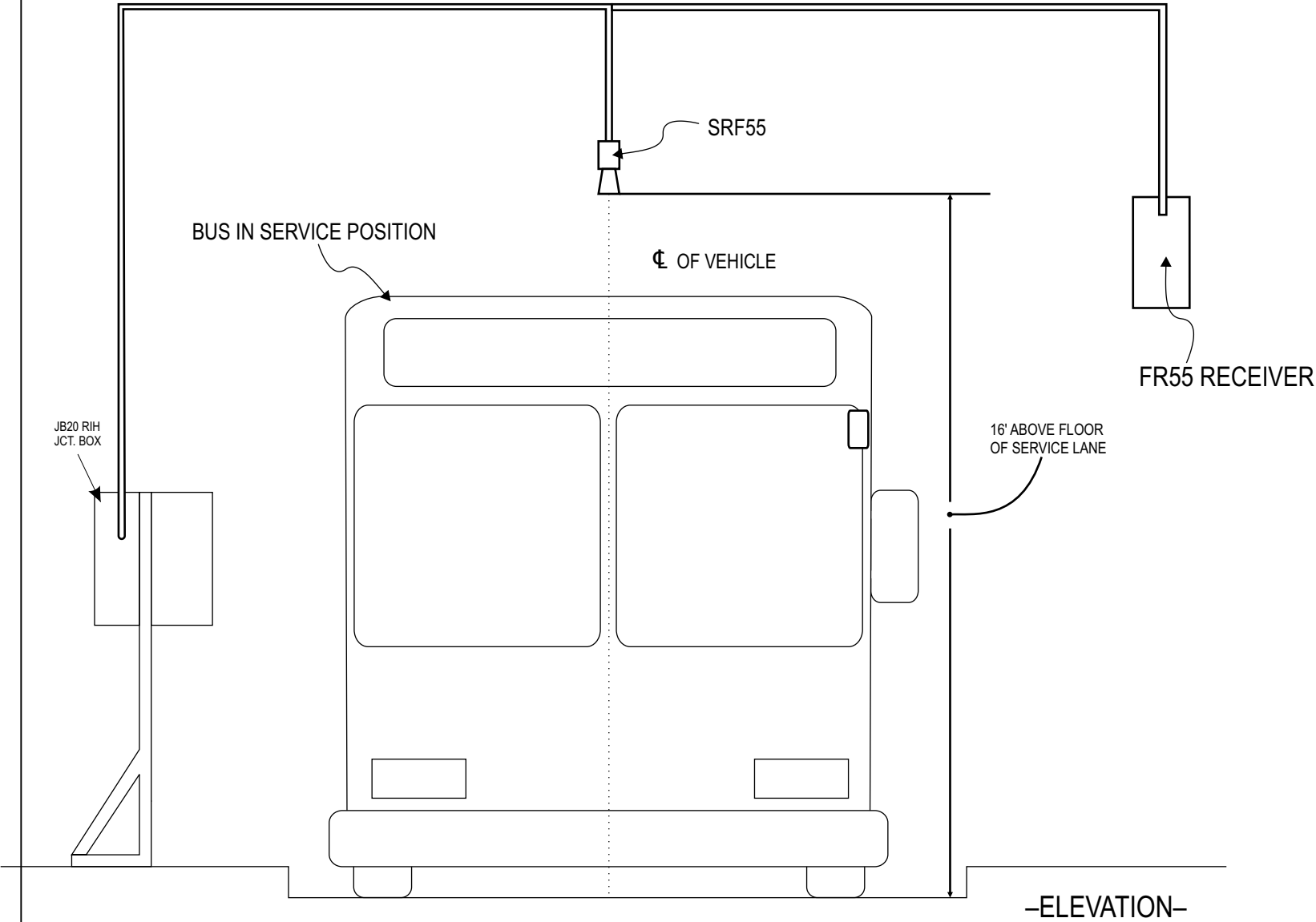
Solid State Pulse Meter
Internal Wiring
To RIH Junction Box Diagram

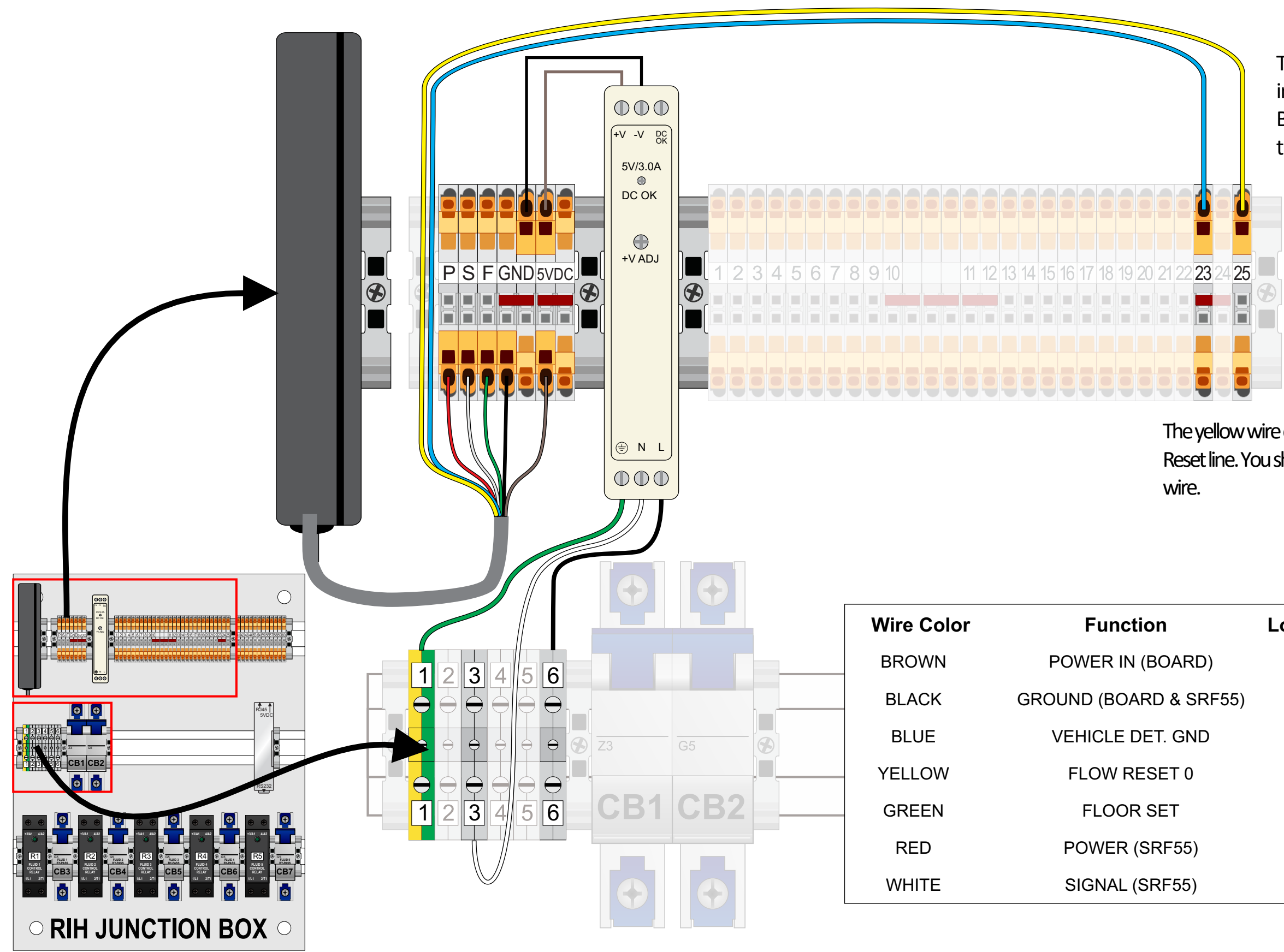
SCALE	DATE	DRAWN BY	APPROVED BY	ISSUE	DRAWING NUMBER
NONE	07/07/2015	MSG		1.0	FWD160



NOTE:
EXACT LOCATION OF THE SRF55 VEHICLE DETECTOR WILL BE DETERMINED NEAR PROJECT COMPLETION WHEN BUSES ARE AVAILABLE TO ASSIST WITH PLACEMENT.

FOR ADVANCE PLACEMENT (PRIOR TO CONSTRUCTION) , S&A SYSTEMS
REQUIRES A SCALED DRAWING ILLUSTRATING THE EXACT PLACEMENT OF EACH
BUS TYPE IN THE OWNER'S FLEET WHILE FUELING.

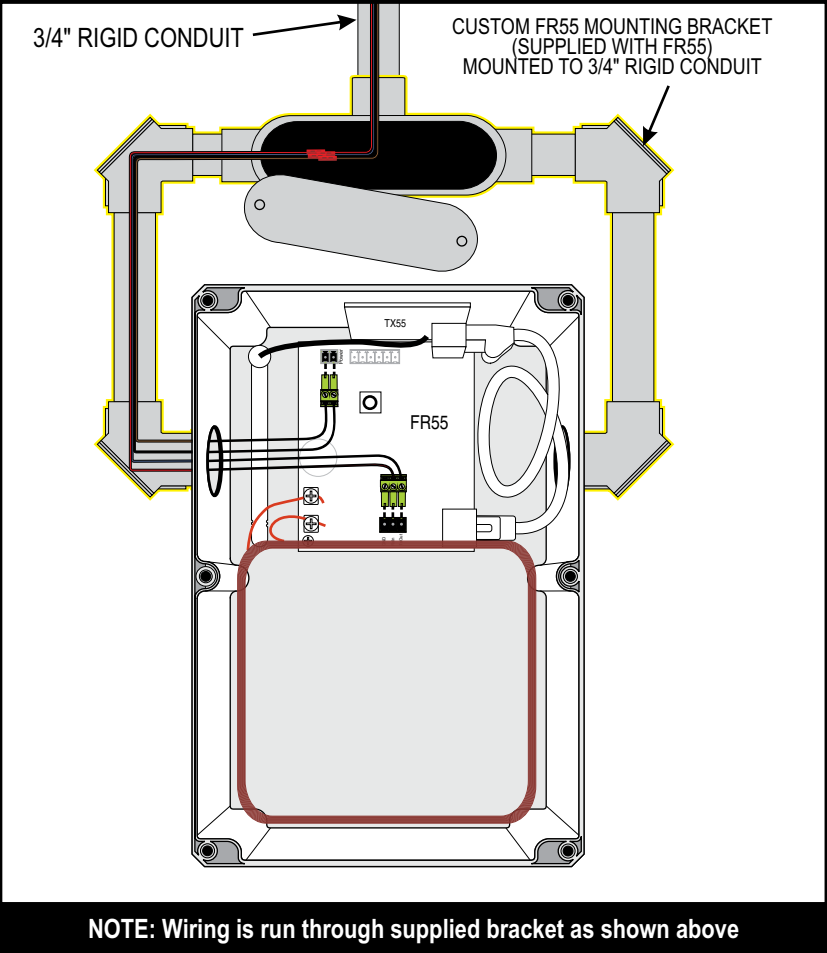




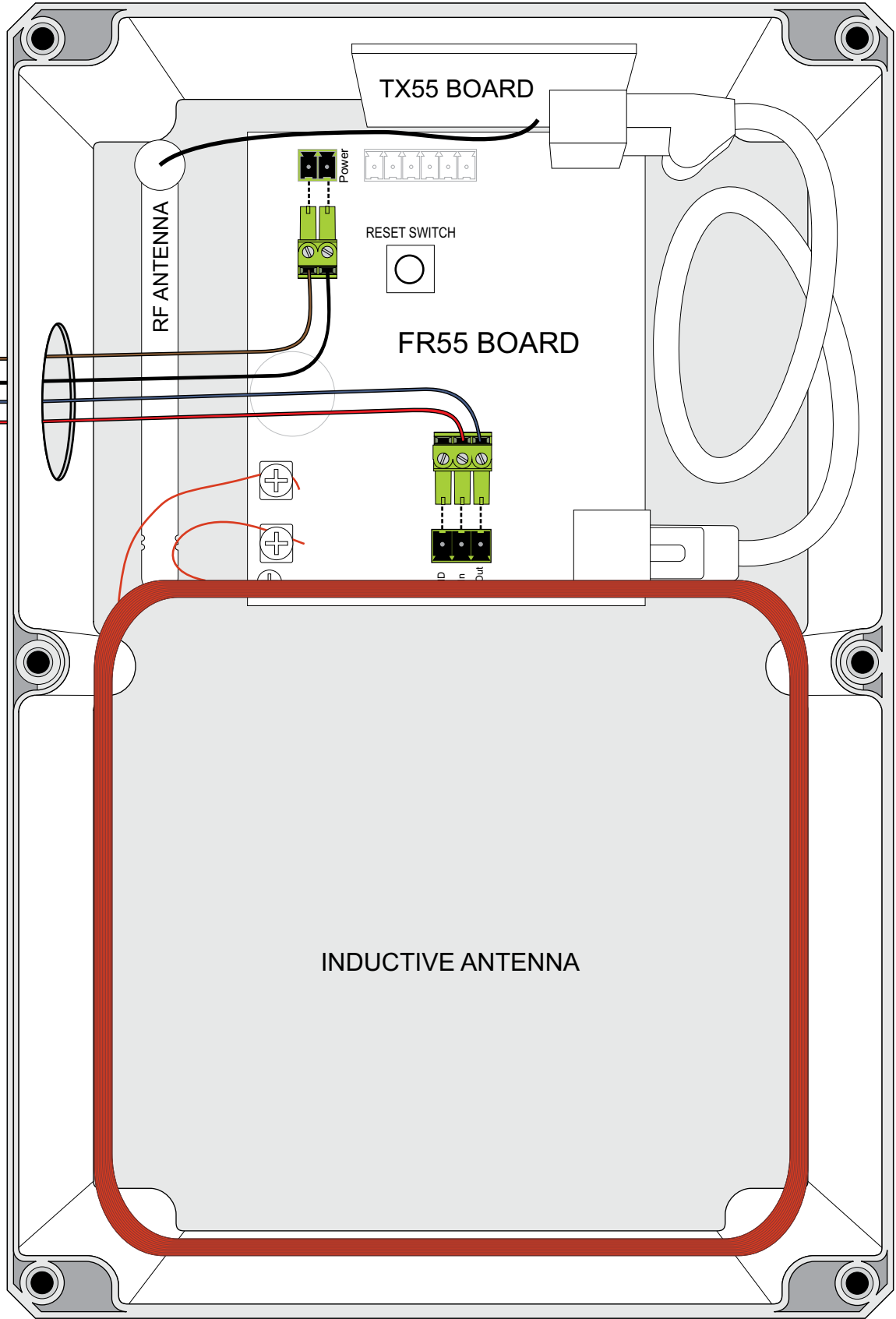
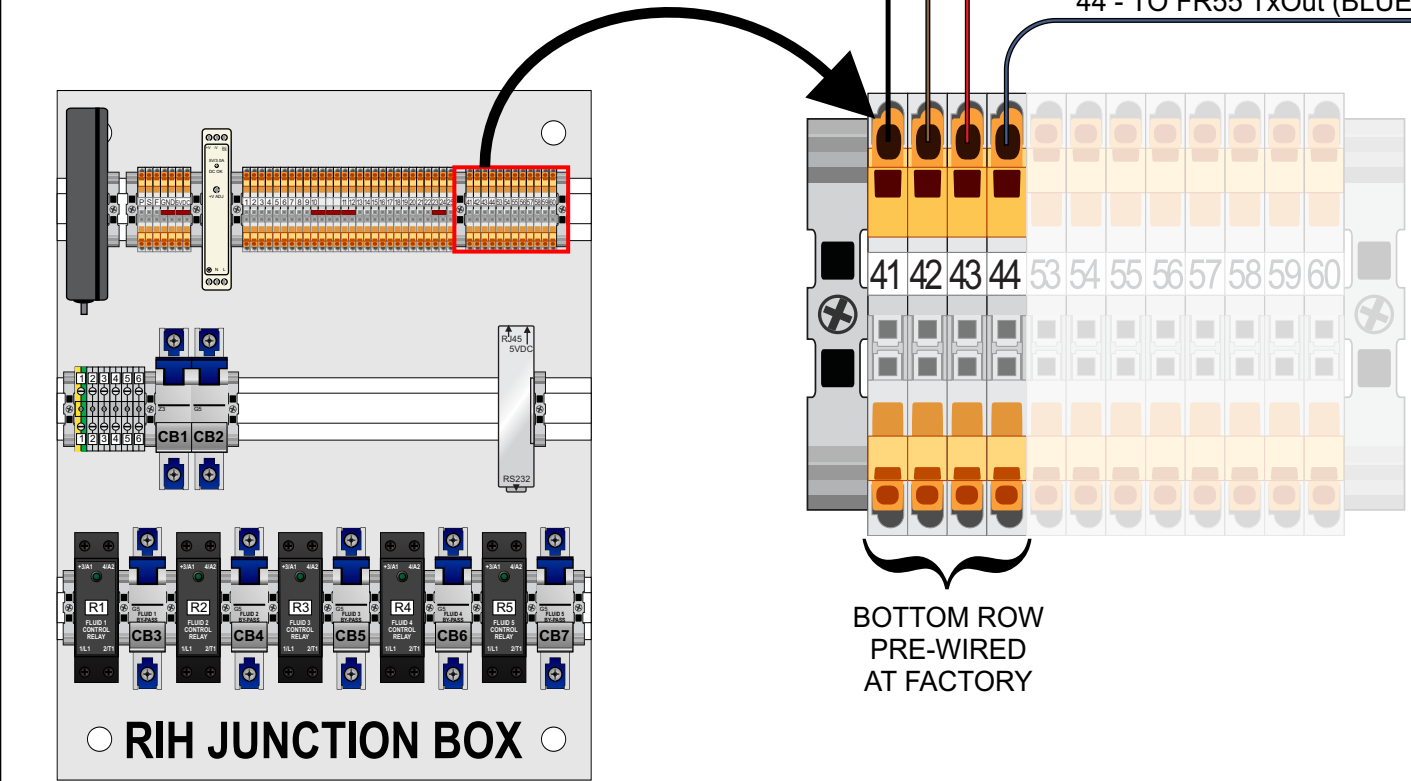
The wire color ordering here is important.
Blue in 23 and Yellow in 25 is the typical factory default.

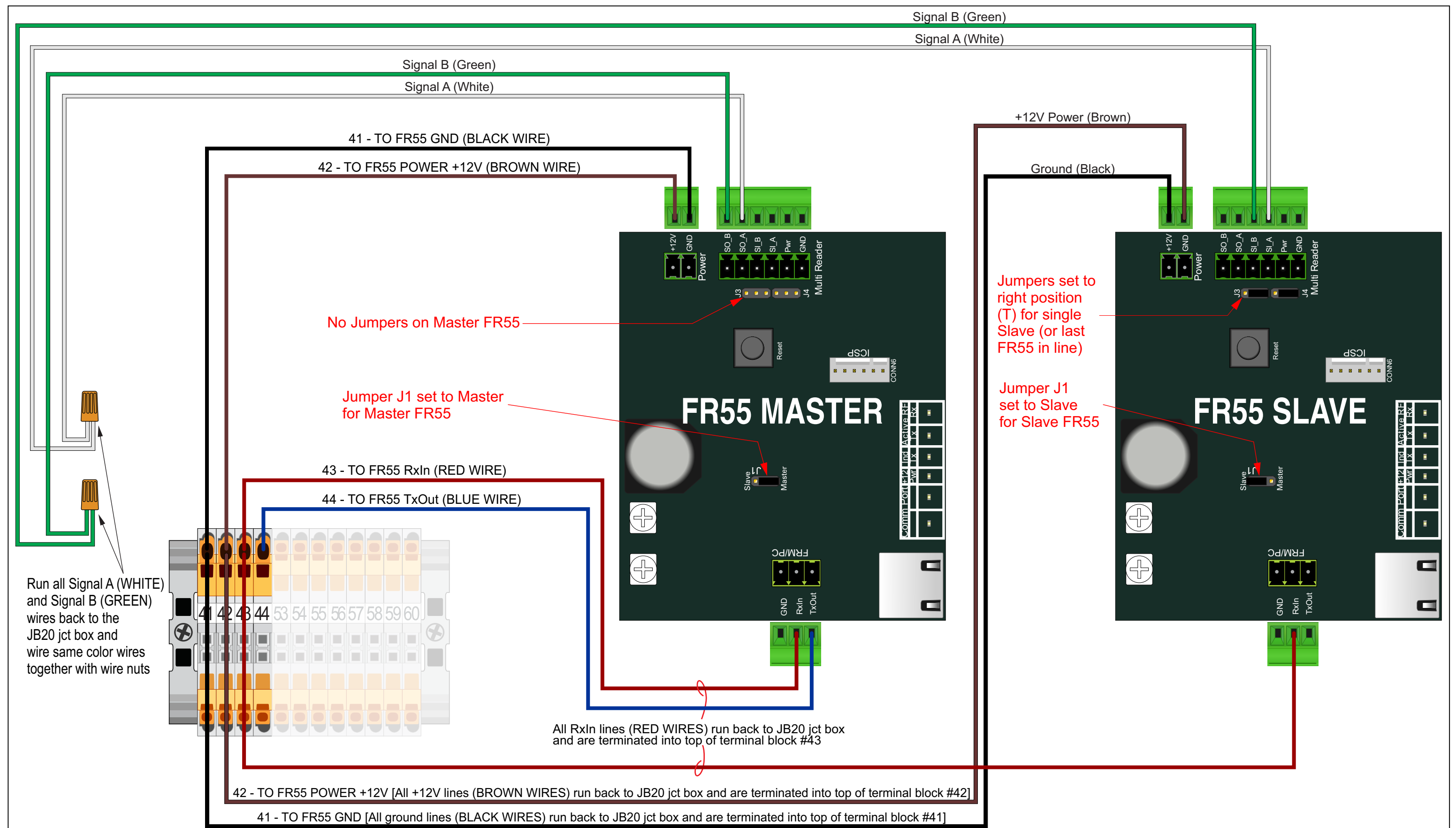
The yellow wire on the bottom of terminal block 25 is the Reset line. You should see a purple wire in 23. It is the Ground wire.


Wire Color	Function	Location On Board	To JB20 Location
BROWN	POWER IN (BOARD)	CONN1 - Pwr	5VDC (Veh. Det Block)
BLACK	GROUND (BOARD & SRF55)	CONN1 - Grd	GND (Veh. Det Block)
BLUE	VEHICLE DET. GND	CONN9 - Grd	23 (I/O Block)
YELLOW	FLOW RESET 0	CONN9 - Out0	25 (I/O Block)
GREEN	FLOOR SET	CONN11 - Grd	F (Veh Det Block)
RED	POWER (SRF55)	CONN11 - Yes	P (Veh Det Block)
WHITE	SIGNAL (SRF55)	CONN3 - Rx	S (Veh Det Block)

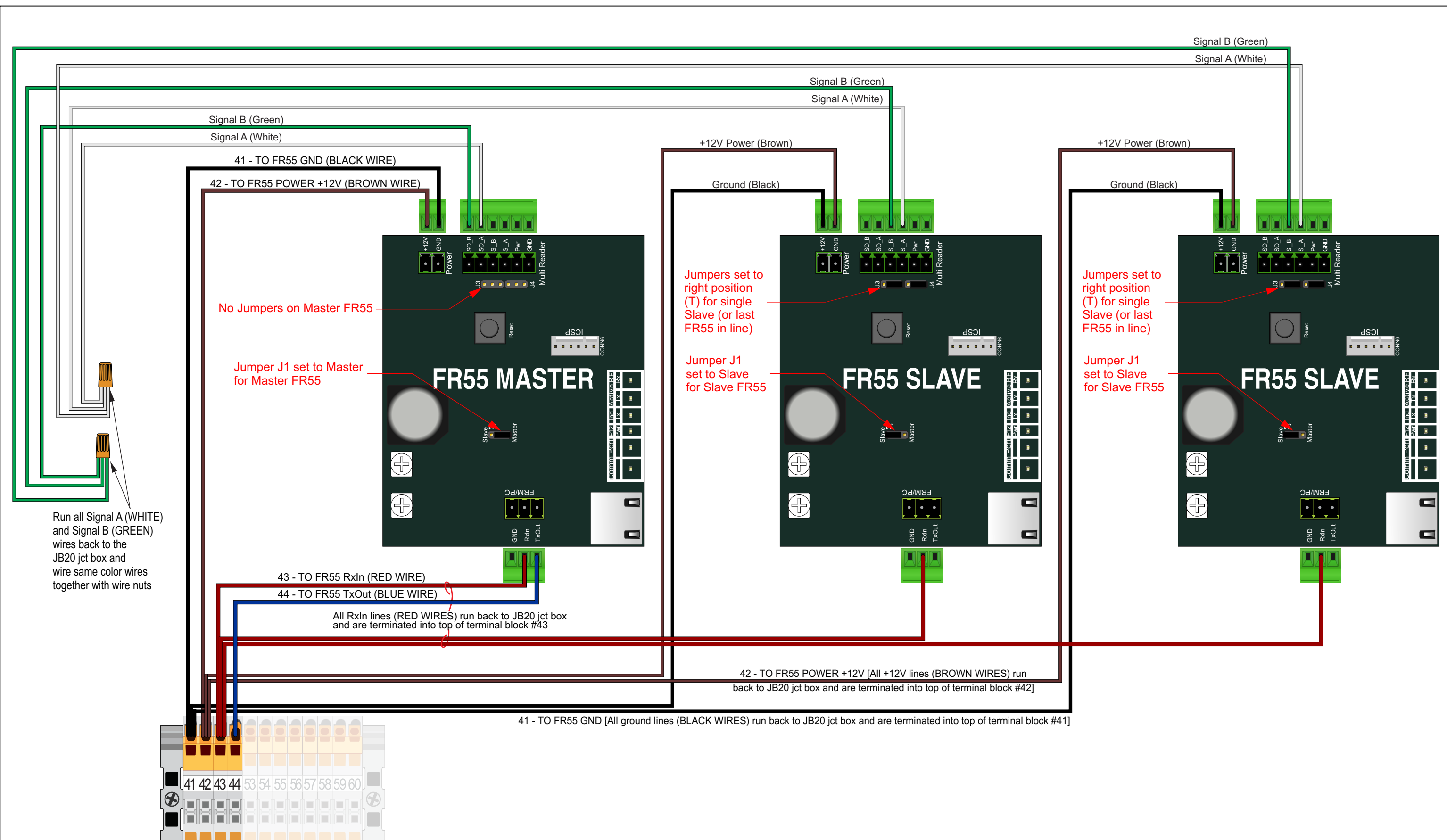


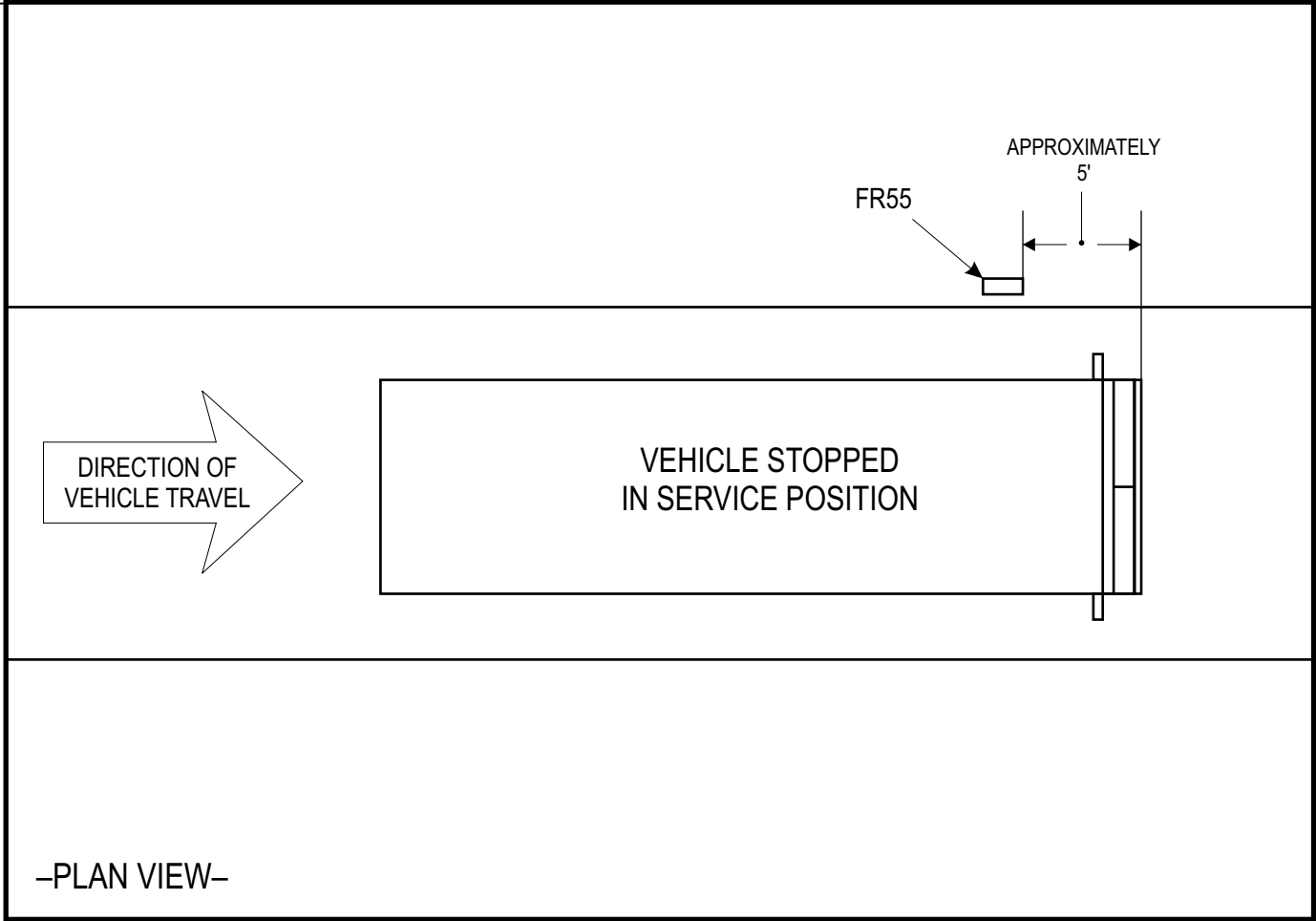
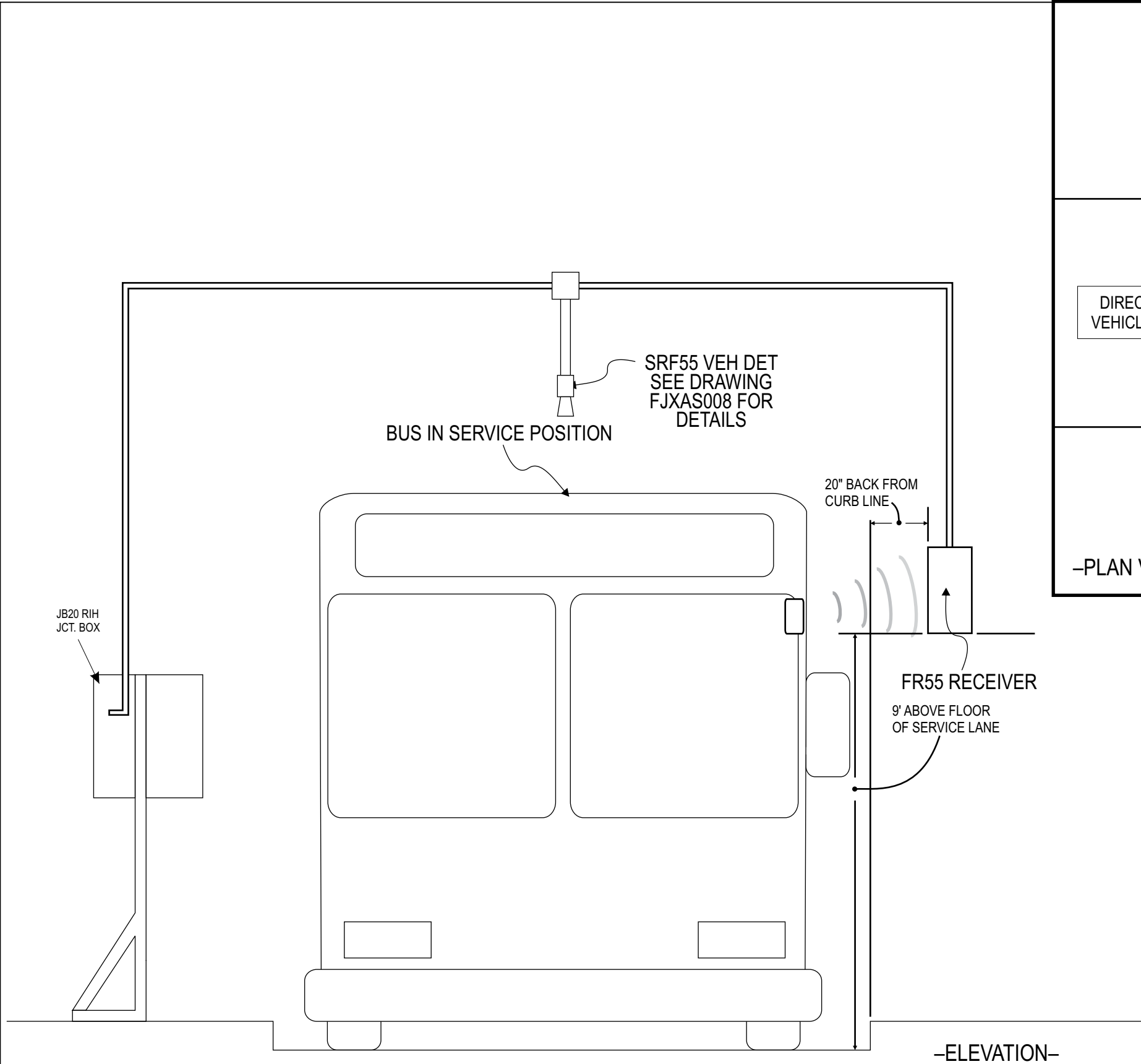
Troubleshooting Tip:
Oftentimes power cycling the FR-55 will
resolve an issue with the receiver. See
Page 6 to see how to power cycle the
FR-55.



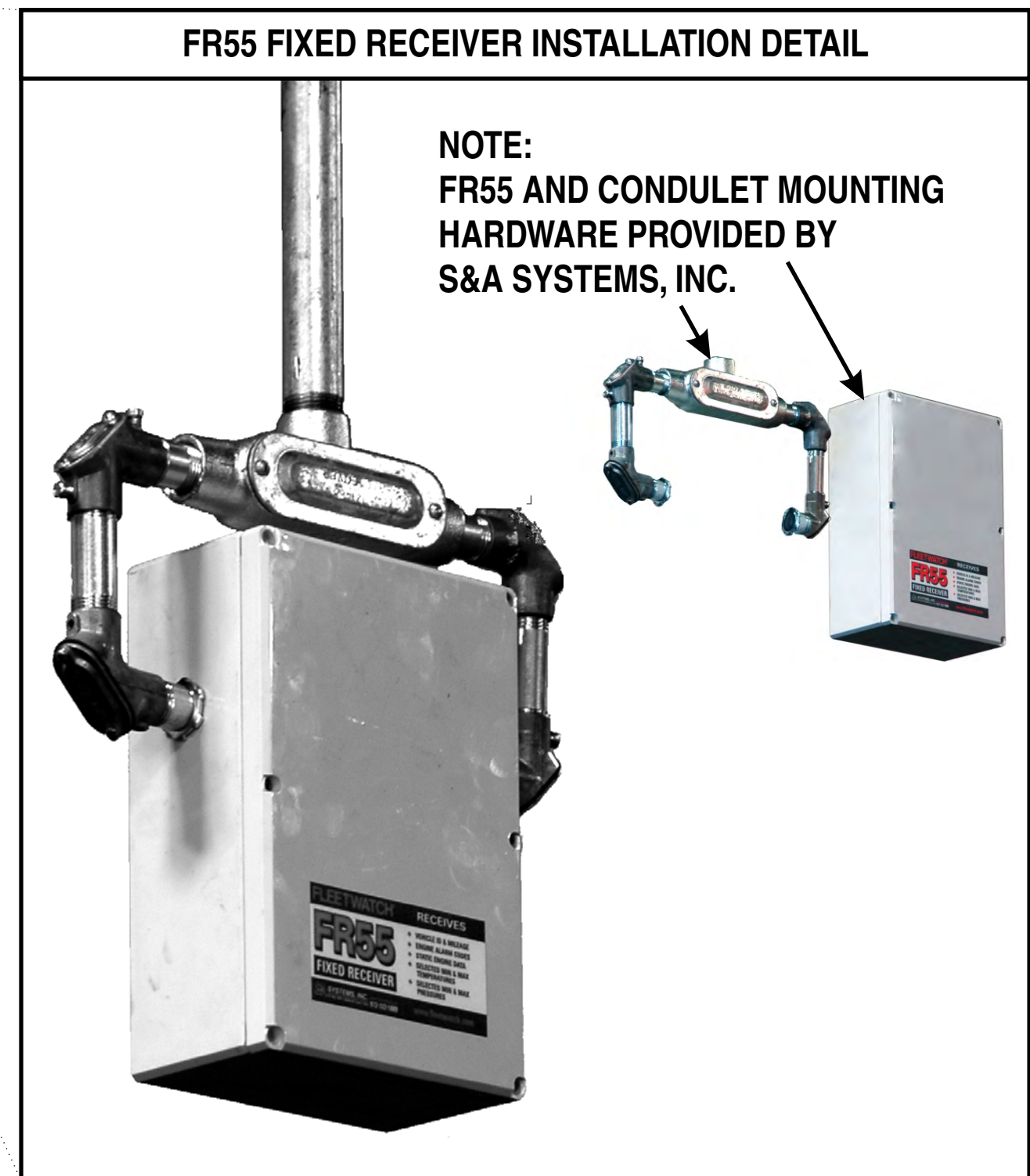
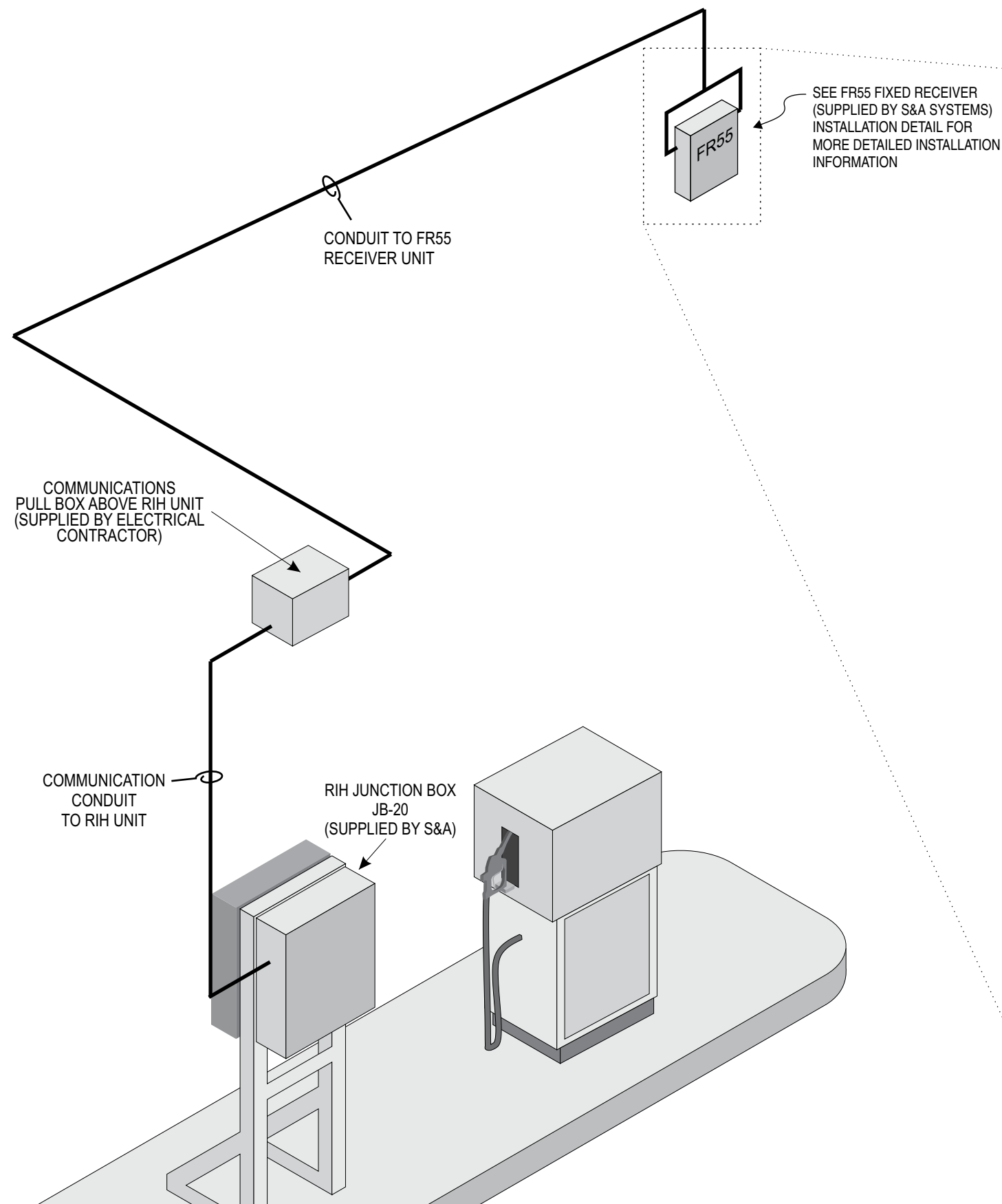


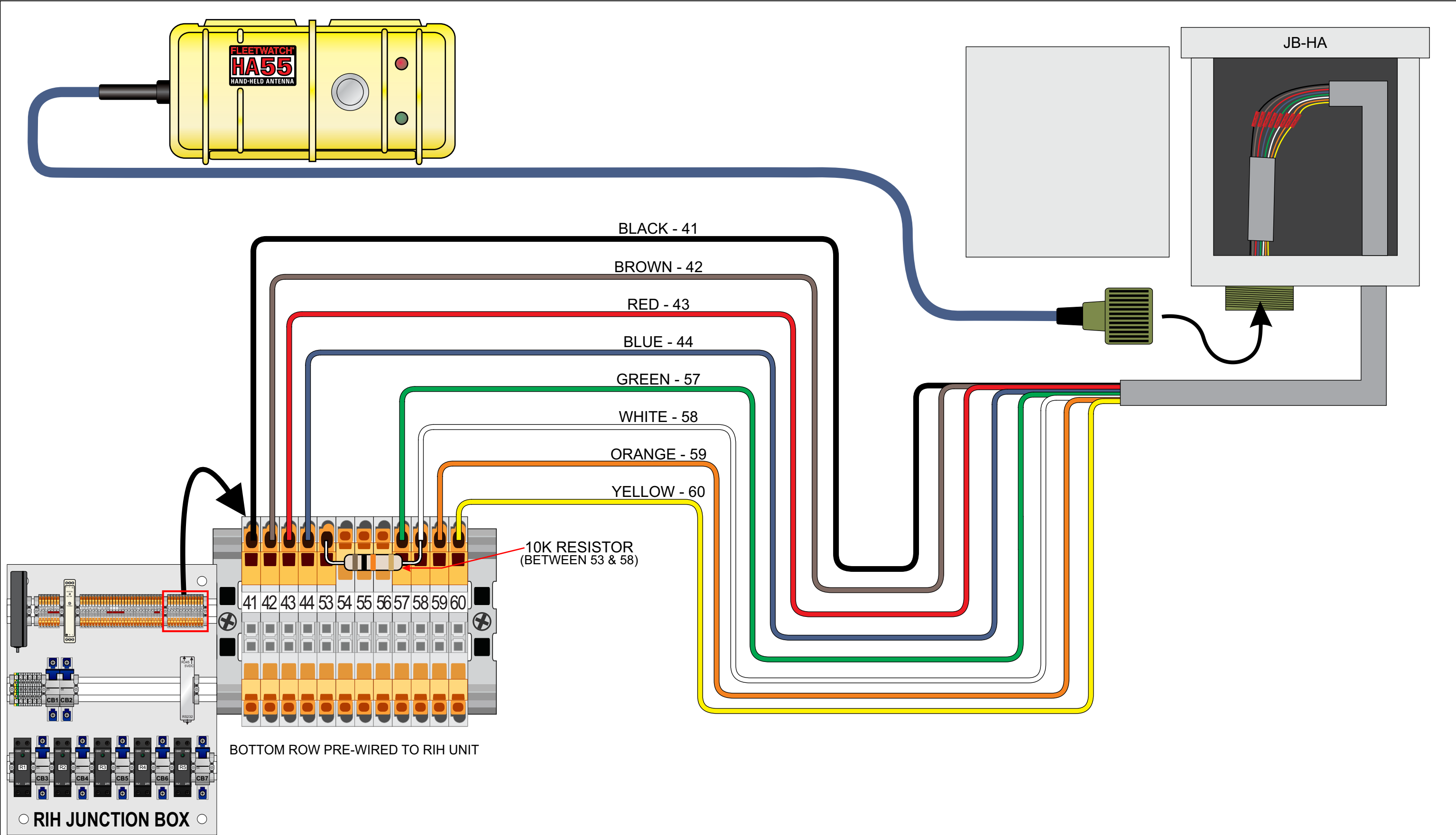
 3939 East 19th Ave, Suite 200, Aurora, CO 80011 Phone: 303-751-0225 Fax: 303-751-3353	FLEETWATCH FMS WIRING DIAGRAMS	FR55 Master with One Slave Internal Wiring	SCALE	DATE	DRAWN BY	APPROVED BY	ISSUE	DRAWING NUMBER
			NONE	07/07/2015	MSG		2.0	FWD210

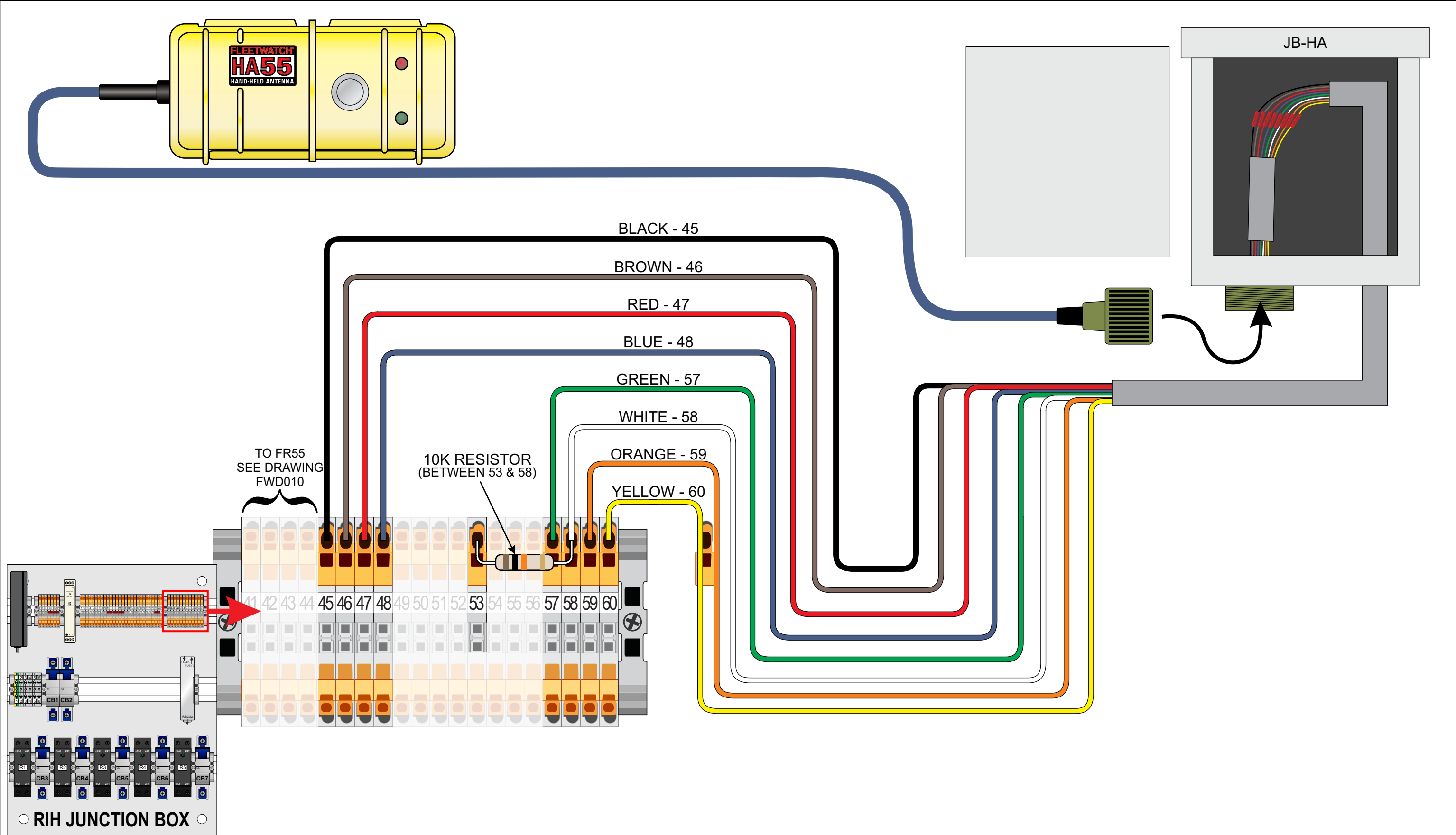


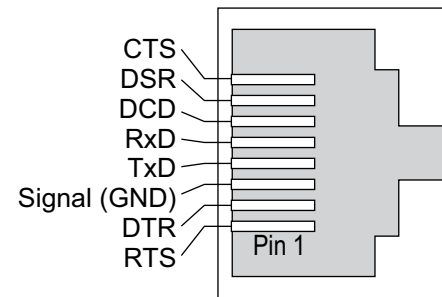
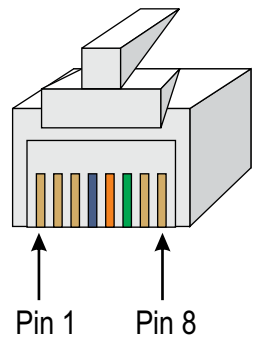
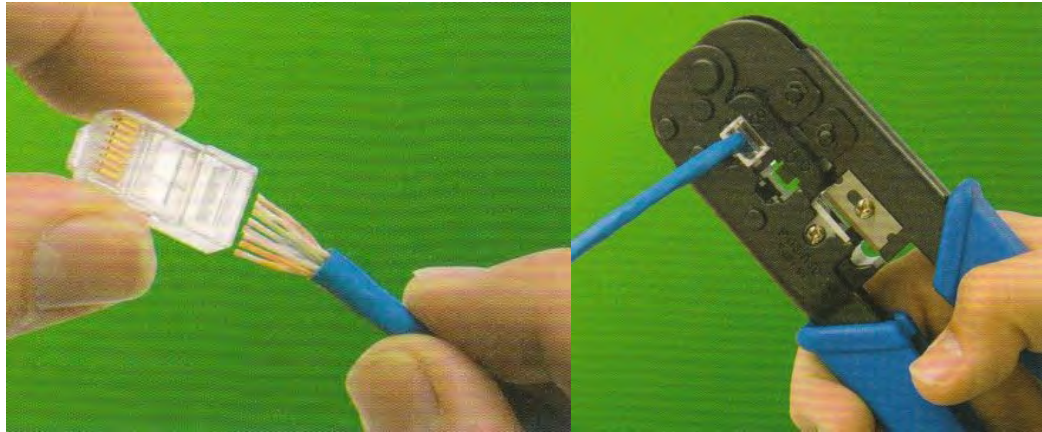


SCALE	DATE	DRAWN BY	APPROVED BY	ISSUE	DRAWING NUMBER
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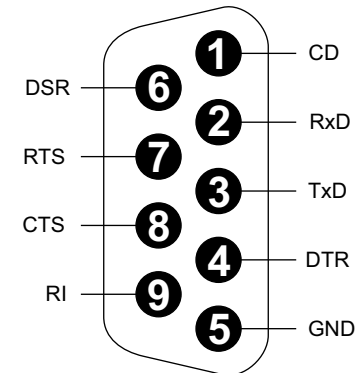




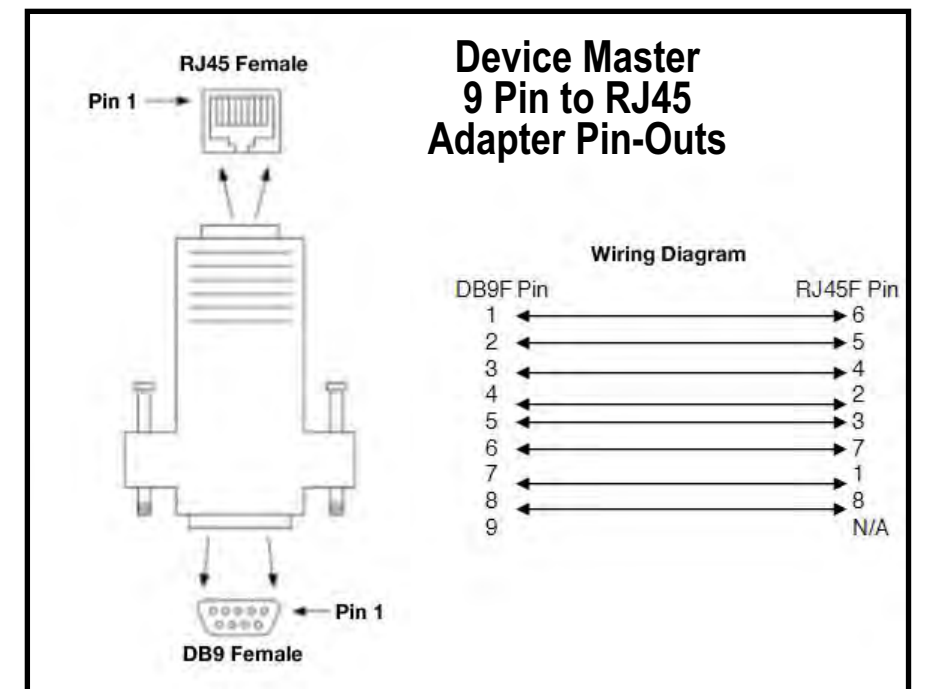
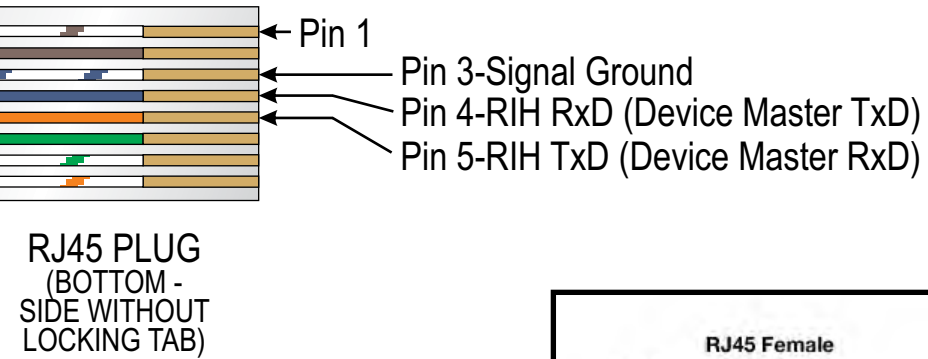
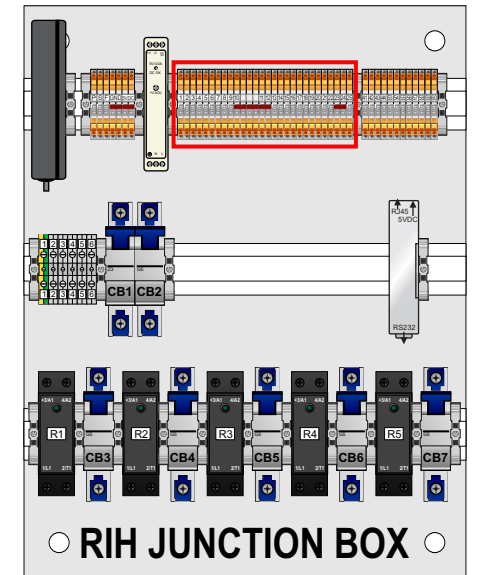


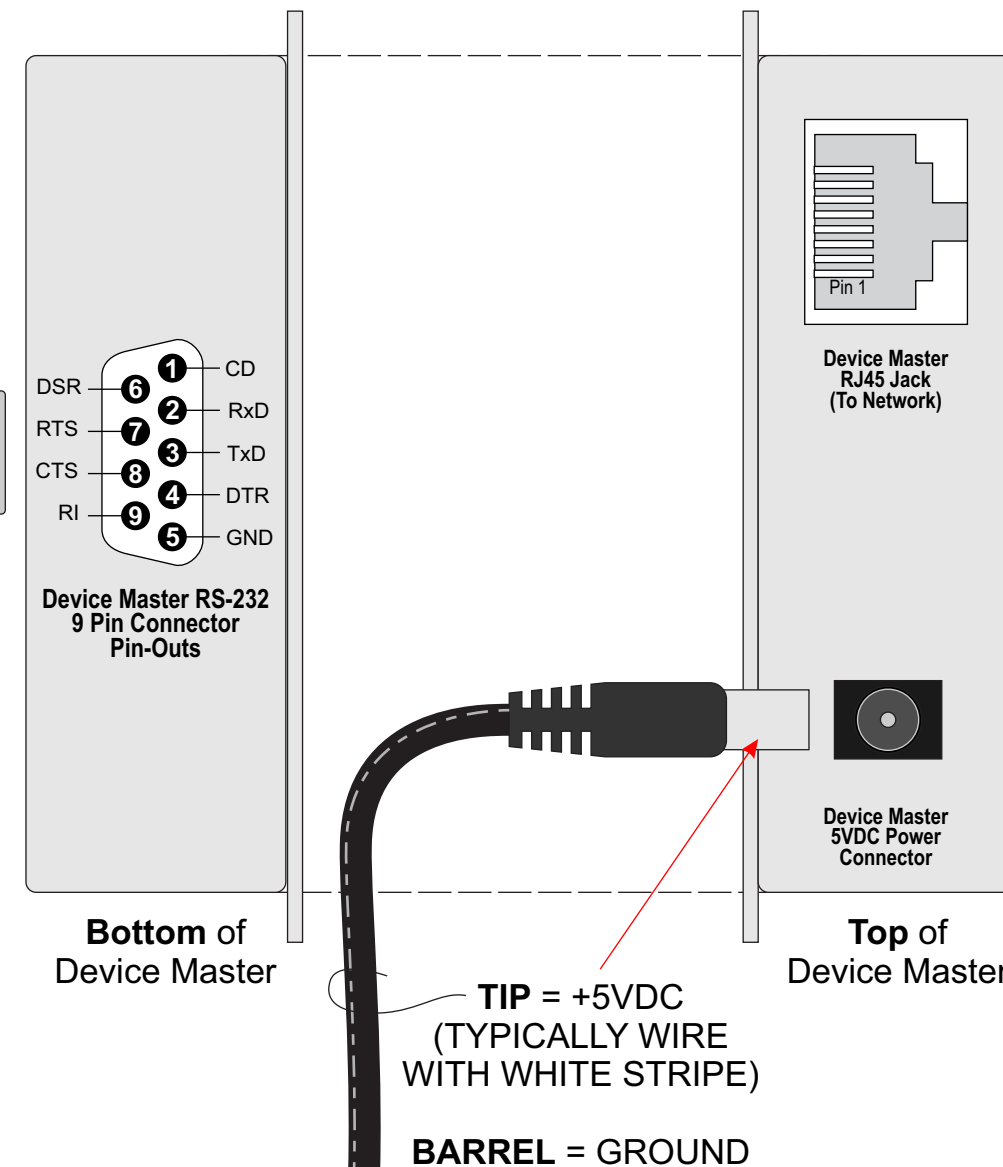
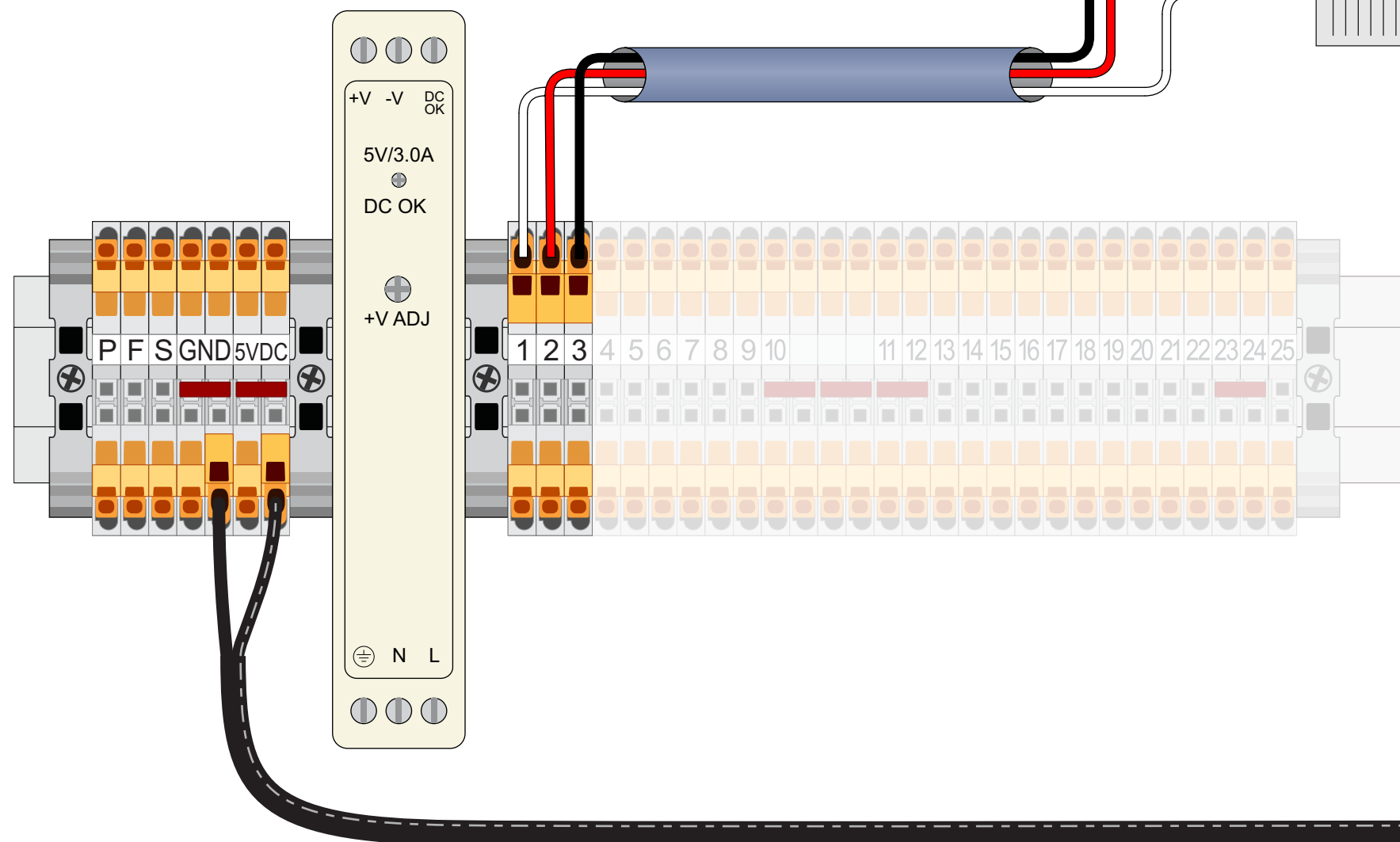
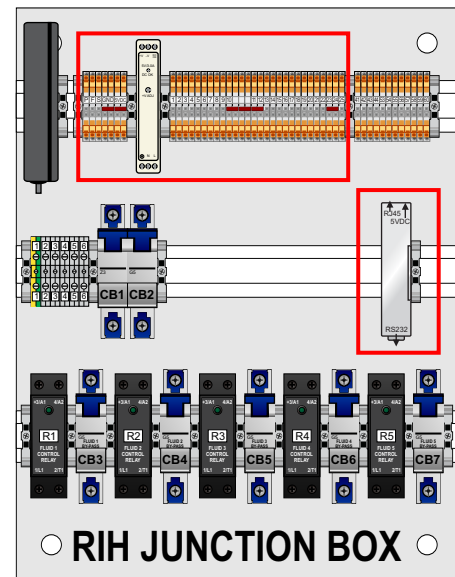


Device Master RS-232
RJ45 Jack
Pin-Outs

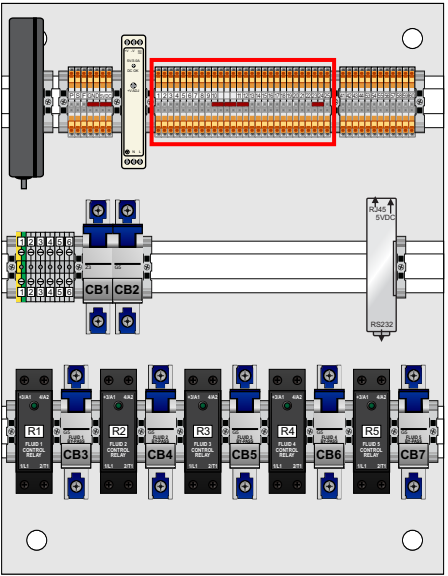
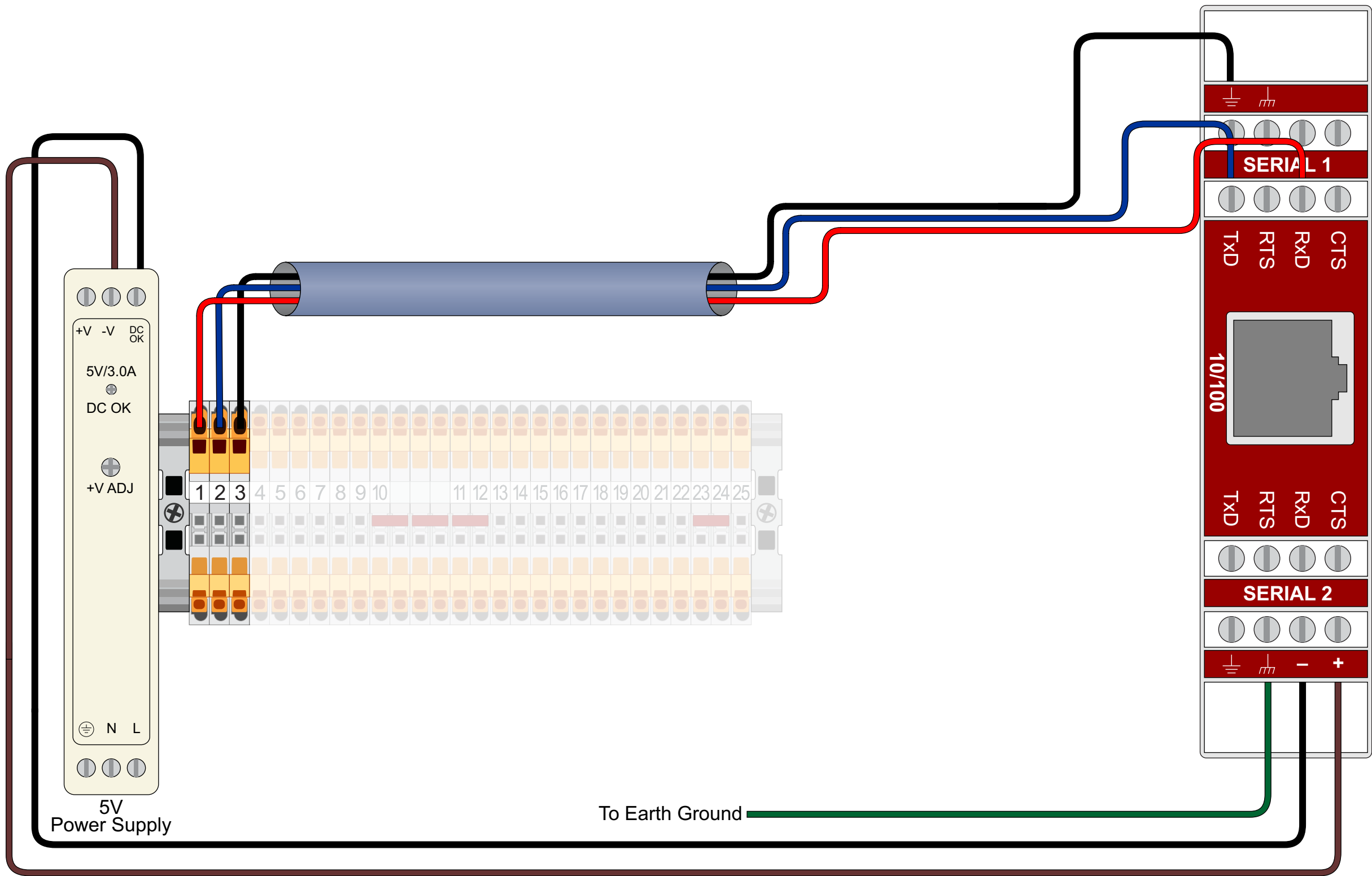


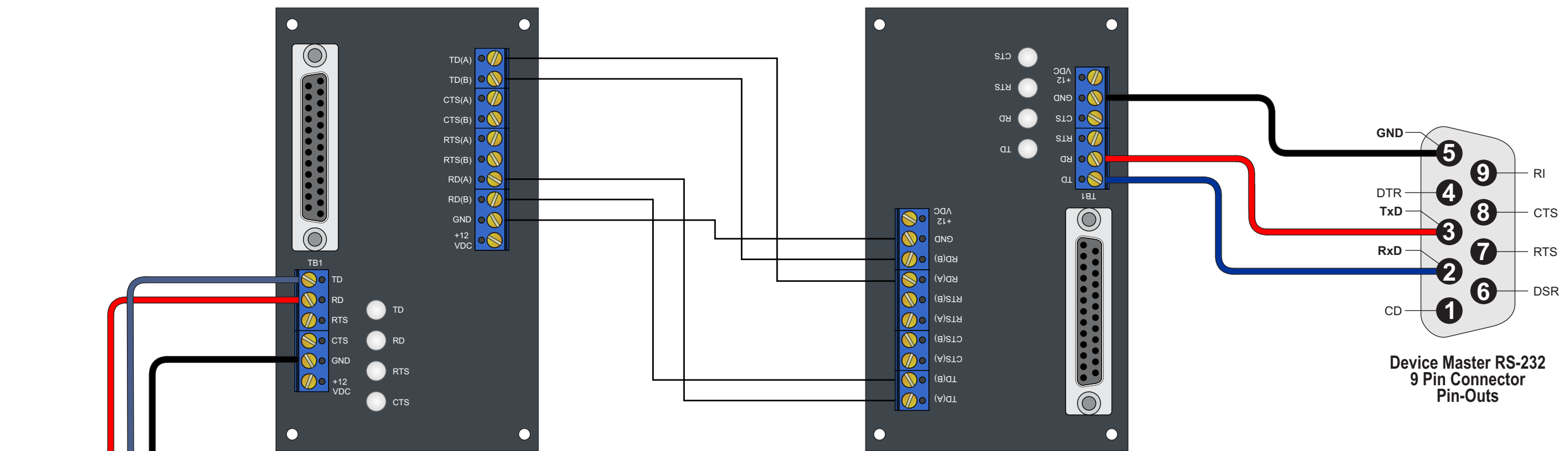
Device Master RS-232
9 Pin Connector
Pin-Outs





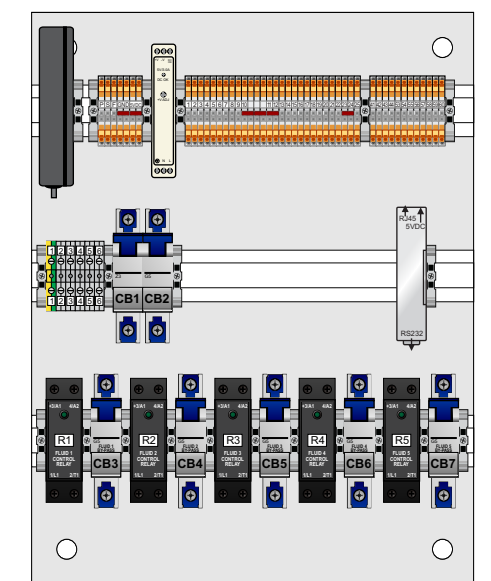
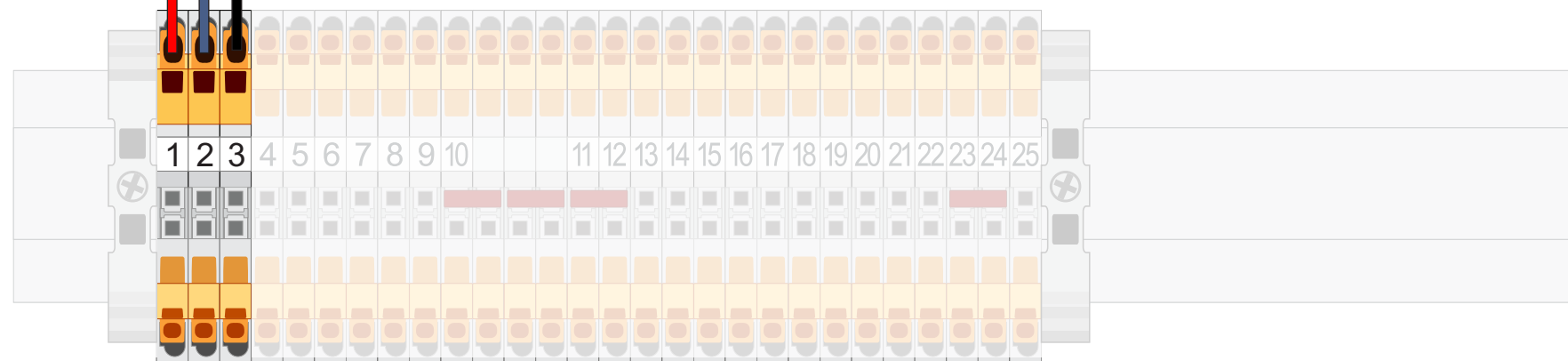
2-Port 1E Device Master





Optical Isolator in JB20 RIH Junction Box

Optical Isolator at Device Master



Adding Large Patch Antenna or Tertiary Slave

