

PDB Construction Quick Reference Guide

Front Panel Switch

Parts Needed	Steps
-Front Panel Switch Plate -HV Switch (9209K551, McMaster-Carr) -Contact Block (9209K127, McMaster-Carr)	-Insert switch into appropriate hole in front panel, securing with toothed washer from bag -Snap contact block on HV switch behind switch plate, obeying "up" arrow
-60A Breaker Package (BS 7547, Blue Sea Systems)	-Insert breaker in slot labeled "TEC" on front panel, with "off" switch on the bottom -Secure in place with rounded screws from bag
-100A Breaker Package (BS 7547, Blue Sea Systems)	-Insert breaker in slot labeled "FEB" on front panel, with "off" switch on the bottom -Secure in place with rounded screws from bag
-None	-Remove outermost nut, toothed washer, and flat washer from prongs on breakers

Back Panel

Parts Needed	Steps
-Triax Connector w/ High Voltage Cables (5219, Pomona- See Cabling Instructions) -Back Panel (20848-097, Schroff)	-Slide triax connector and cables through semi-circular hole in rear panel, with cased side on the side of rear panel that will be on exterior -Secure with Q-slip and nut on interior side
-9 Pin Connector (205203-3, Tyco)	-Slide connector through back panel such that black end is on interior side, silver end exterior
-Screw Lock Set (5205817-1, Tyco)	-Secure 9 pin connector with a screw followed by two flat washers on exterior side of panel, a lock washer and nut on interior side of panel

Side Panels

Parts Needed	Steps
-Ground Connector -Left Side Panel (34560-193, Schroff Set) -2x 3/8" Size 16 Screws (92941A624, McMaster-Carr) -2x 3/8" Flat Washers (92676A450, McMaster-Carr) -2x 3/8" Toothed Washers (92164A031, McMaster-Carr)	-Align ground connector bar with appropriate holes at rear of left side panel. Bar must be on interior of side panel (side where rows of indentions on side panels are coming out of plane of panel rather than going in) -Secure in place using screw followed by flat washer, toothed washer listed at left for each hole
-Right Side Panel (34560-193, Schroff Set) -Grey Marine Connector (6800G3, APP) -2x 10-24 Size 1 1/4" Screws (90272A249, McMaster-Carr) -2x 10 Size 1/2" Diameter Flat Washer (91090A103, McMaster-Carr) -2x 10 Size Split-Lock Washer (91102A740,	-Align grey marine connector with appropriate holes at rear of right side panel. Bar must be on interior of side panel (side where rows of indentions on side panels are coming out of plane of panel rather than going in) -Secure in place using screw followed by split-lock washer, flat washer listed at left for each

<p>McMaster-Carr) -2x nut (P#: 90480A011, McMaster-Carr)</p>	<p>hole -Fasten with nut on opposite side of screw (should tighten against the marine connector)</p>
<p>-Right Side Panel (With Edits From Above) -Blue Marine Connector (6326G5, APP) -2x ¼” Size 20 Screws (90272A546, McMaster-Carr) -2x Size 20 ¼” Flat Washers (91090A105, McMaster-Carr) -2x Size 20 ¼” Split-Lock Washers (91104A029, McMaster-Carr) -2x Size 20 ¼” Nuts (90480A029, McMaster-Carr)</p>	<p>-Align blue marine connector with appropriate holes at rear of right side panel. Bar must be on interior of side panel (side where rows of indentions on side panels are coming out of plane of panel rather than going in) -Secure in place using screw followed by split-lock washer, flat washer listed at left for each hole -Fasten with nut on opposite side of screw (should tighten against the marine connector)</p>

Box Frame

Parts Needed	Steps
<p>-Left/Right Side Panels After Previous Steps -Connector Bar L-SL (34560-184, Schroff) -Threaded Strip (34561-384, Schroff) -Hole Strip (30845-253, Schroff) -2x 14mm Screws (24560-130, Schroff) -2x Mounting Wings (24564-197, Schroff) -EMC Contact Strip (24560-081, Schroff) -Grub Screw (21100-276, Schroff)</p>	<p>-Attach left and right wings to the front of their respective side panels (front= side farthest from marine and ground connectors) -Slide threaded strip in innermost recess of the connector bar and the hole strip through the outermost recess, securing with the grub screw through the hole at either edge of the strip -Push EMC contact strip through recess on top of the connector bar -Secure connector bar between side panels using one screw through the first hole from the front on the bottom of each side panel and its wing -Numbers of bar should be facing upwards, and grooves pointing towards interior of box</p>
<p>-Left/Right Side Panels After Previous Steps -Connector Bar L-ST (34560-484, Schroff) -Threaded Strip (34561-384, Schroff) -2x 14mm Screws (24560-130, Schroff)</p>	<p>-Slide threaded strip in innermost recess of connector bar -Secure connector bar between side panels using one screw through the eleventh hole from the front on the bottom of side panels -Numbers face up, grooves point towards grooves of front bar</p>
<p>-Left/Right Side Panels After Previous Steps -Connector Bar L-SL (34560-184, Schroff) -Threaded Strip (34561-384, Schroff) -Hole Strip (30845-253, Schroff) -2x 14mm Screws (24560-130, Schroff) -EMC Contact Strip (24560-081, Schroff) -Grub Screw (21100-276, Schroff)</p>	<p>-Slide threaded strip in innermost recess of connector bar and the hole strip through the outermost recess, screwing the grub screw through their aligned holes at either edge -Push EMC contact strip through recess on top of the connector bar -Secure connector bar between side panels</p>

	<p>using one screw from the fifth hole from the rear of each side panel</p> <ul style="list-style-type: none"> -Numbers face up, grooves point towards interior of box
<ul style="list-style-type: none"> -Left/Right Side Panels After Previous Steps -2x Connector Bar L-SL (34560-184, Schroff) -Connector Bar L-ST (34560-484, Schroff) -3x Threaded Strip (34561-384, Schroff) -2x Hole Strip (30845-253, Schroff) -6x 14mm Screws (24560-130, Schroff) -2x EMC Contact Strip (24560-081, Schroff) -2x Grub Screw (21100-276, Schroff) 	<ul style="list-style-type: none"> -Repeating the same procedures as before, secure three more connector bars in the same locations as before, but on the top set of the holes in the side panels -Grooves point in same direction as before, numbers facing downwards (to interior of box)
<ul style="list-style-type: none"> -2x Cradle Mount (MCNY-1250-9-C, Thomas & Betts) -6x Retainer (21100-464, Schroff) -6x Captive Screws (21101-101, Schroff) -Completed Back Panel 	<ul style="list-style-type: none"> -Place back panel against the side of the rear connector bars with the hole strips -Secure in place using retainers and captive screws in six holes along edge of back panel -Place one cradle 10cm towards marine connectors from high voltage cable insert point on the back panel -Place second cradle in the middle of the side panel, about 10cm in front of marine connector

Attaching Switch Panel and Card Guides

Parts Needed	Steps
<ul style="list-style-type: none"> -Front Panel Switch (Completed) -4x 2.5 Size Metric Screws (92005A071, McMaster-Carr) 	<ul style="list-style-type: none"> -Place front panel switch between front bars of box directly beside the right wing -Fasten in place with screws in the four holes
<ul style="list-style-type: none"> -36x Card Guides (24560-351, Schroff) 	<ul style="list-style-type: none"> -Snap a single card guide into the leftmost grooves between both the bottom front and middle bars and the top ones, with the completely flat side of the guide closest to the side panel -Repeat this, placing two grooves between each card guide -This should give 18 card guides on top and bottom, extending to the 69th groove (and very near front panel switch)

Attaching Grounding Braids

Parts Needed	Steps
<ul style="list-style-type: none"> -Backplane -2x Ground Braid (See Cabling Instructions) -4x #12-24 3/4" Brass Screw (92453A294, McMaster-Carr) -8x 9/16" #12 Flat Washer (92916A360, 	<ul style="list-style-type: none"> -Place one end of a ground braid over one of the holes in the center of the top return busbar -Secure in place using screw followed by flat washer, ground braid lug, busbar, flat washer, split lock washer, then nut

McMaster-Carr) -4x ¼” #12 Split-Lock Washer (92164A029, McMaster-Carr) -4x #12-24 Brass Nut (92671A013, McMaster-Carr)	-Secure the other end of the same ground braid to the hole in the same location on the center return busbar in the same manner -Repeat the above for a second ground braid connecting the center return busbar and the bottom return busbar
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Attaching Backplane to Box

Parts Needed	Steps
-Box Skeleton From Above Steps -Backplane -2x Test FEB Cards -20x 2.5 Metric Screws (7985A4PH2.5X6, Brikksen) -Backplane Barcode Label	-Place backplane in box behind middle connector bars flush against box’s left side panel such that busbars are pointed to the rear -Using a test FEB card at each end, make sure that the backplane is in a position that the cards will make good connections. Make minor shifts in position of backplane if needed -Once final position is determined, secure backplane using the screws -Place barcode label on the center of the topmost busbar

Internal Cabling Instructions:

Color	Gage	Length	Start	P# at Start	End	P# at End
Yellow	6	25cm	SB120 (Bottom)	947, APP	60A Breaker (Bottom)	0270-0003, Cableco Tech
Red	2	25cm	SB175 (Bottom)	6811G3, APP	100A Breaker (Bottom)	0270-0005, Cableco Technologies
Yellow	6	52cm	60A Breaker (Top)	0270-0003, Cableco Technologies	Top Source Bar	34001, Waytek
Red	2	52cm	100A Breaker (Top)	0270-0005, Cableco Technologies	Bottom Source Bar	35020, Waytek
Black	6	14cm	SB120 (Top)	947, APP	Top Return Busbar (Left)	34001, Waytek
Black	2	13cm	SB175 (Top)	6811G3, APP	Bottom Return Busbar (Left)	35020, Waytek
Black	2	9cm	Center Return Busbar (Right)	35020, Waytek	Ground Connector Bar	35022, Waytek
Orange	22	38cm	Triax Connector	(Soldered)	Orange 18AWG Wire	191600148, Molex
Orange	18	12cm	Orange 22AWG Wire	191600148, Molex	HV Power Switch Screw	(Attaches to Screw 4)
Orange	18	16cm	HV Power	(Attaches to	Backplane 3	172166-1, Tyco

			Switch Screw	Screw 3)	Pin Connector (top)	
Blue ***	22	68cm	Triax Connector	(Soldered)	Backplane 3 Pin Connector (bottom)	172166-1, Tyco
Red	18	14cm	Backplane 2 Pin Connector (Bottom)	172165-1, Tyco	60A Breaker (Bottom)*	400-0002, Allied
Black	18	14cm	Backplane 2 Pin Connector (Top)	172165-1, Tyco	Top Return Busbar (Left)**	400-0002, Allied
Red	22	8cm	9 Pin Connector (Slot 4)	66504-9, Tyco	Fuse Holder Wire 1	7242K111, McMaster-Carr
Red	22	46cm	Fuse Holder Wire 1 (Opposite End)	7242K111, McMaster-Carr	60A Breaker (Bottom)*	400-0002, Allied
Black	22	8cm	9 Pin Connector (Slot 9)	66504-9, Tyco	Fuse Holder Wire 2	7242K111, McMaster-Carr
Black	22	28cm	Fuse Holder Wire 2 (Opposite End)	7242K111, McMaster-Carr	Top Return Busbar (Left)**	400-0002, Allied
Green	22	8cm	9 Pin Connector (Slot 2)	66504-9, Tyco	Fuse Holder Wire 3	7242K111, McMaster-Carr
Green	22	46cm	Fuse Holder Wire 3 (Opposite End)	7242K111, McMaster-Carr	100A Breaker (Bottom)	400-0002, Allied
White	22	8cm	9 Pin Connector (Slot 6)	66504-9, Tyco	Fuse Holder Wire 3	7242K111, McMaster-Carr
White	22	25cm	Fuse Holder Wire 4 (Opposite End)	7242K111, McMaster-Carr	Bottom Return Busbar (Left)	400-0002, Allied

*=These two wires are crimped together inside the M6 lug at the 60A breaker

**= These two wires are crimped together inside the M6 lug on the top return busbar

***= Be sure to continue twisting the high voltage blue 22AWG wire with the orange 18AWG wire as it leaves the high voltage switch

Finishing Up

Parts Needed	Steps
<ul style="list-style-type: none"> -Back Panel with Connectors Installed -6x Retainers (21100-464, Schroff) -6x Captive Screws (21101-101, Schroff) 	<ul style="list-style-type: none"> -Place back panel against the rear bars with holes aligned with ground/marine connectors -Place retainer and captive screw in each slot of back panel and screw into rear connector bar
<ul style="list-style-type: none"> -16x FEB Cards -Indicator Card -DCM Card -16x FEB Faceplates -Indicator Faceplate -DCM Faceplate -36x Standoff Screw (8403, Keystone) -36x Retainer (21100-464, Schroff) -36x Captive Screw (21101-101, Schroff) -18x Barcode Labels 	<ul style="list-style-type: none"> -Stick proper barcode labels on all of the cards in the free space near the top and front end of the card -Place retainers then captive screws in the holes at the top and bottom of the FEB, DCM, and Indicator Card faceplates -Place a faceplate on the front of its respective card and secure in place with 2 standoff screws in the holes closest to the captive screws -Repeat previous step for the DCM, Indicator, and 16 FEB cards -Slide all cards into their respective card guides (should see switch panel, Indicator Card, DCM Card, 16x FEB Cards from box's right to left)
<ul style="list-style-type: none"> -2x Cover Plate (24560-081, Schroff) -24x 6mm Screws (21101-884, Schroff) -Kapton Tape 	<ul style="list-style-type: none"> -Place a cover plate on both the top and bottom of the plate, sliding the ends into the EMC contact strip on the connector bars at the front and rear of the box -Stick kapton tape over locations where cover is closest to screw ends protruding from busbars to prevent contact -Secure covers in place using the screws through the holes in the side plate
<ul style="list-style-type: none"> -DCM Key -2x M2.5 14mm Screws (92000A108, McMaster-Carr) 	<ul style="list-style-type: none"> -Secure DCM key in the hole at the bottom of the DCM faceplate using the two screws
<ul style="list-style-type: none"> -2x Strain Relief Bar -4x Size 8 Screws (90272A192, McMaster-Carr) 	<ul style="list-style-type: none"> -Align strain relief bars with last holes at the rear of the side panels, one on the top set, one on the bottom set -Secure in place with screws listed on left through the holes in the side panel
<ul style="list-style-type: none"> -PDB Barcode Label -Kapton Tape 	<ul style="list-style-type: none"> -Wrap a strip of kapton tape around rear end of side panel to dull its sharp edges -Place barcode label centered on the top of the back panel