



**Broadcast Devices, Inc.**

**Technical Reference Manual**

***IPC-800 8 Channel Interlock Consolidation Panel***

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**Rev. B 05/24**

## Table of Contents

<b>I.</b>	<b>Introduction</b>	<b>3-4</b>
<b>II.</b>	<b>IPC-800 Connector Layout and Connection Information</b>	<b>4-8</b>
<b>III.</b>	<b>Suggested SWP-206D Connection Diagrams</b>	<b>8-11</b>
<b>IV.</b>	<b>Warranty</b>	<b>12</b>

## **I. Introduction**

The IPC-800 Interlock Consolidation panel is designed to allow for the combining of the various interlock closures from BDI DPS-100D series power meters and the BDI SWP-206D Digimonitor antenna protection chassis. There is provision on each panel for a set of DPS-100D series inputs for a typical RF combiner system such that a DPS-100D meter can be connected to input combiner module and reject load. Combined with the SWP-206D chassis which monitors DPS-100D series meters connected to an antenna system and other external interlock inputs such as motorized switches and/or patch panels the IPC-800 allows for an consolidated interlock connection to be provided to up to 8 stations. Additional panels can be added for more stations if needed.

### **A. Basic System Description**

#### Combiner Module Protection

A typical multi station RF combiner such as for FM or TV where signals are consolidated to be fed to one antenna system will be described as this is what the IPC-800 panel was created for. A DPS-100D series meter is connected to the RF input of the individual combiner module and provision for a second DPS-100D series meter to be connected to a combiner module reject load if needed or desired is provided. Each DPS-100D meter for an individual station has an interlock connection and a second relay for RF presence which can be used to light the RF ON/RF SAFE indicator lights on the front of the panel. BDI supplies a DSUB15 to RJ45 adapter prewired so that a simple 8 conductor CAT5E cable can be used to interface between each DPS-100D meter and the respective channel on the IPC-800 panel. This provides complete combiner module interlock protection in the event of a high VSWR indication at the input meter or a high level of RF entering the reject termination load. Either condition can interrupt the station interlock for that individual station. Additionally, because each DPS-100D series meter has provision for external interlock inputs patch panels, motorized switches and or lock out tag out switches can be connected such that interlocks will be interrupted by the operation of these devices.

### **B. Antenna VSWR/External Interlock Input protection**

The IPC-800 panel has provision to connect the BDI SWP-206D chassis interlock connector via a supplied DSUB25 M/F cable. Once connections are made to the SWP-206D chassis such as DPS-100D power meters connected to an antenna system and other external interlock connections such as a motorized switch configuration and/or patch panel system the IPC-800 panel provides for broad band interlock interruption in the event of a broad band VSWR event, if a motorized switch is moved in the broad band path or a patch is moved and reconfigured in the broad band path. Each of these events causes all interlocks from stations connected to the IPC-800 panel to open. As described above the IPC-800 combines the combiner module DPS-100D interlock

connections with an antenna interlock connection for complete interlock control of a given system.

### C. RF Safety Indicators

The IPC-800 front panel has indications for up to 8 stations for an “RF ON” condition and an “RF SAFE” indication. Each DPS-100D series meter connected to a combiner module input uses the second DPS-100D relay in the RF presence configuration to control these indicators. If RF is detected by a user defined threshold the red RF ON indicator will illuminate. If the RF is turned off the green RF SAFE indicator will illuminate if RF levels fall below the set threshold. There is also a toggle switch underneath each set of station indicators for testing of the lights. Moving the switch to the up indication will illuminate both lights to test the system. There is also a pair of power indicator lights. Because the IPC-800 can be used as part of an RF Safety plan we provided inputs for redundant power supplies. Two 5 VDC power packs are supplied but there is also provision for external redundant power if desired.



IPC-800 Front Panel

## II. IPC-800 Connector Layout and Connection Information

Refer to the IPC-800 Connector Locator diagram and connection chart at the end of these instructions. Before proceeding you will note a series of 2 position jumpers placed along the top and 2 below each set of RJ45 receptacles. The jumpers provide a bypass to the SWP-206 interlock relay and each of the DPS-100D power meters connected to combiner inputs and reject loads. You should start by making only the connection to the SWP-206D chassis via the DSUB25M receptacle on the panel. Assuming all of the connections to the SWP-206D are complete you should see a closure for the respective channel on the green 2 position plug in connectors labels ILOCK 1,2, 3, etc. Refer to the SWP-206D technical manual for instructions on how to set up that unit for use.

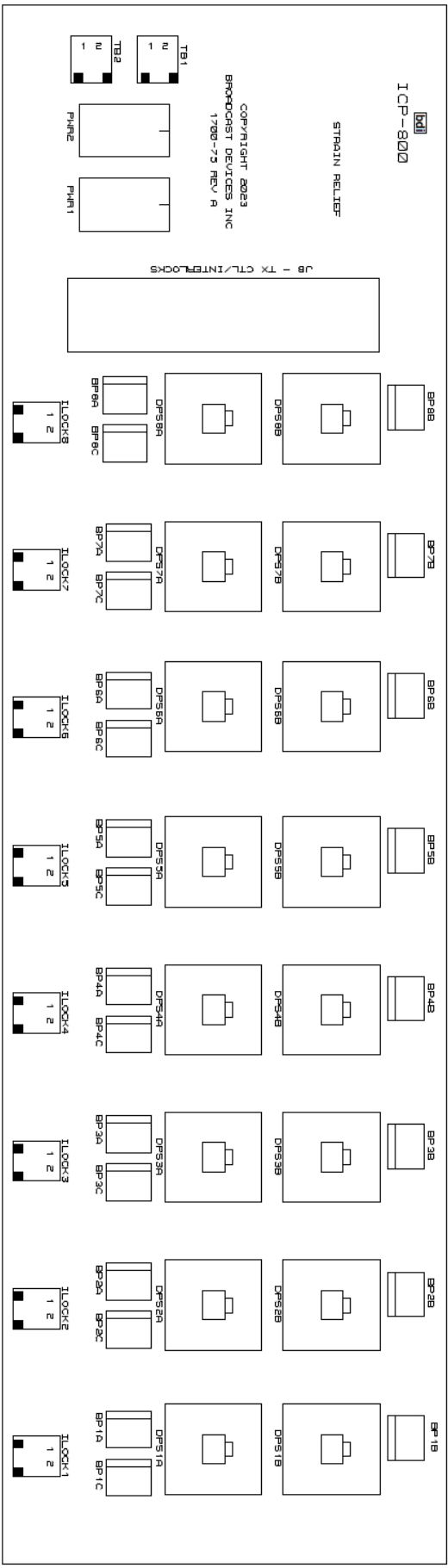
Each station connection set is the same. The instructions below will be for the first channel but all connections otherwise are identical. **"n" in connector and jumper numbers refers to the specific channel being connected, tested or bypassed.**

Provisions for each station are as follows:

1. Once the SWP-206D is connected remove the jumper marked BP”n”C which is right hand jumper under the set of RJ45 receptacles viewing the panel from the rear. Re check the respective ILOCK connector for continuity. If you lose continuity by removing that jumper with the SWP-206D connected then inspection of the connections to the SWP-206D are in order. If all is in order proceed to step 2.
2. Connect the RJ45 cable from the DPS-100D series meter connected to the combiner input module for the respective channel DPS”n”A connector. This is the left hand 2 position connector under RJ45 receptacles for that channel. The DPS-100D meter needs to be powered up and there should be no VSWR trips and the lock out tag out connector on top of the DPS-100D meter should have either a jumper or should be connected to an interlock path for such things as a patch panel. This lock out tag out connection is found on the last two positions of the 12 position green Phoenix connector on top of each DPS-100D power meter. If all is in order remove the 2 position jumper marked BP”n”A for that channel and re check for continuity at the respective ILOCK connector. If all is in order proceed to step 3. If not then check the DPS-100D meter for proper connection and configuration. Refer to the DPS-100D series technical manual for further detail about its operation and configuration. Once the DPS-100D meter is connected verify that the proper front panel indication is showing. If RF power is applied the RF ON LED will be lit and the RF SAFE LED should be extinguished. For this test make sure the toggle switches are turned off in the down position. Note that if you remove power to the DPS-100D connected to that channel the RF ON indicator will be lit. The reason for this is that all BDI power measurement systems are designed to operate in a failsafe condition. That is to say that if the monitoring system fails it assumes RF is present to insure safety.
3. If a DPS-100D series meter is connected to the reject load of the combiner module connect the RJ45 cable to the RJ45 receptacle marked DPS”n”B for that channel. Remove the 2 position jumper marked BP”n”B which is located above the the two RJ45 receptacles for that channel and re check the interlock connection at the ILOCK connector. If all is in order you now have all of the interlock connections to the station connected and proceed to step 4.
4. After each of the connections is made it is a good idea to test the far end of each connection to make sure that when the far end interlock connection is removed that the closure at the ILOCK connector is broken simulating an interlock open condition. For DPS-100D meters simply go to the meter and remove the DSUB15 adapter from the meter and see that the interlock drops. For the SWP-206D open any external interlock inputs to insure that ALL interlocks for every channel open. Also remove power to any DPS-100D power meters one at a time connected to the SWP-206D which monitor combiner output, antenna feed lines and if

supplied system load DPS-100D. By doing this you have tested every element of the system that should remove and restore interlock connections.

## ICP-800 Connector Locator



## ICP-800 Interlock Connection Panel Connections

CH	TX INTERLOCK	BROADBAND INTERLOCK		COMBINER INPUT DPS-100D		REJECT LOAD DPS-100D						
		SWP-206		BYPASS	DPS-100D RJ-45	BYPASS	DPS-100D RJ-45	BYPASS				
1	ILOCK1	<b>J8 - TX CTL/INTERLOCKS</b>						BP1C	DPS1A	BP1A	DPS1B	BP1B
2	ILOCK2							BP2C	DPS2A	BP2A	DPS2B	BP2B
3	ILOCK3							BP3C	DPS3A	BP3A	DPS3B	BP3B
4	ILOCK4							BP4C	DPS4A	BP4A	DPS4B	BP4B
5	ILOCK5							BP5C	DPS5A	BP5A	DPS5B	BP5B
6	ILOCK6							BP6C	DPS6A	BP6A	DPS6B	BP6B
7	ILOCK7							BP7C	DPS7A	BP7A	DPS7B	BP7B
8	ILOCK8							BP8C	DPS8A	BP8A	DPS8B	BP8B

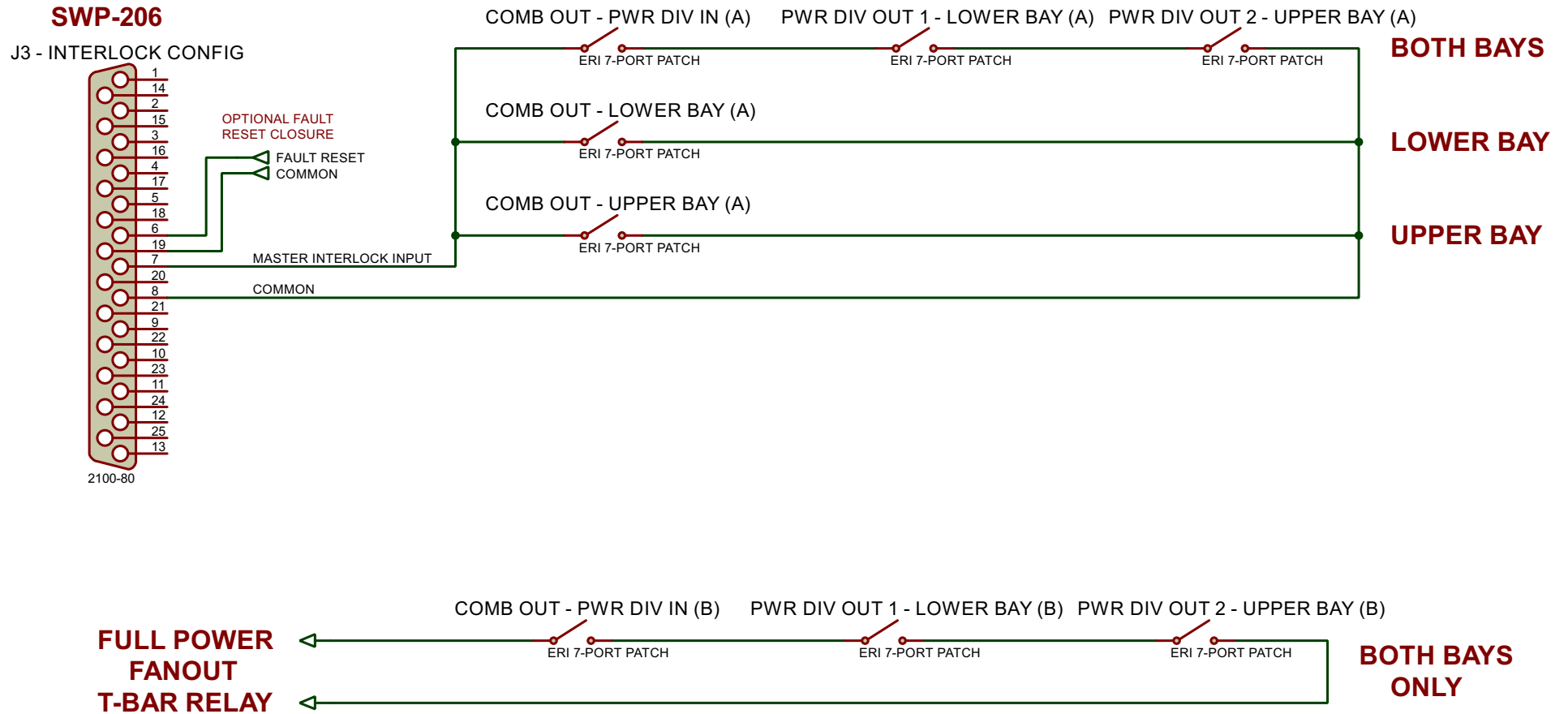
### **III. Suggested SWP-206D Interconnection Diagrams**

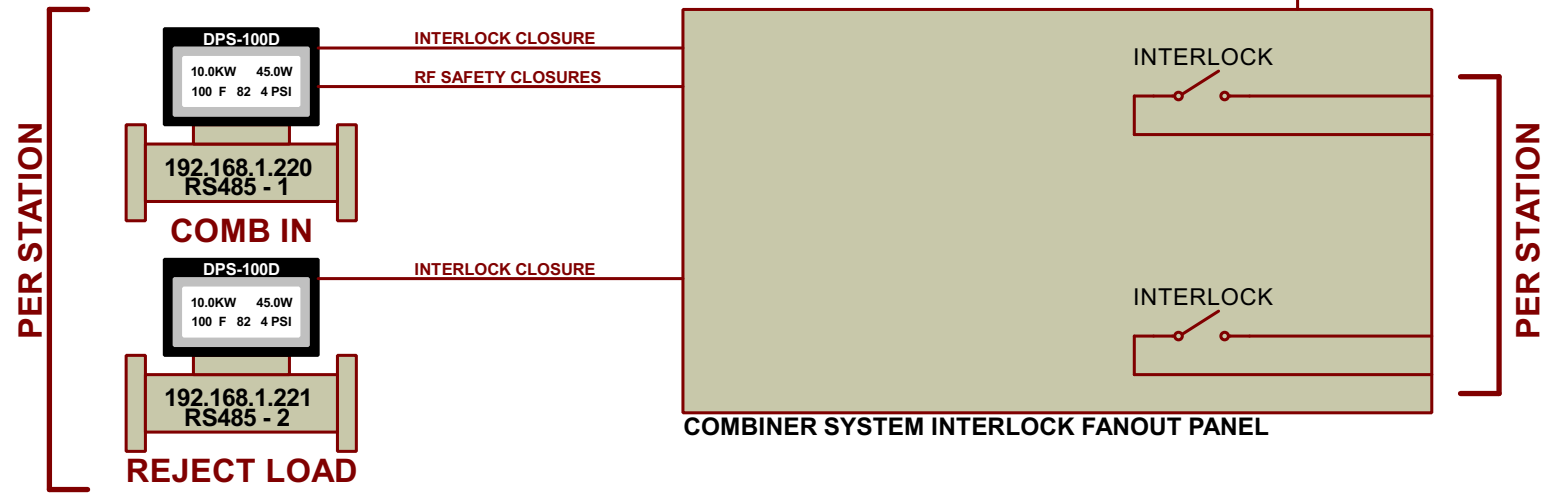
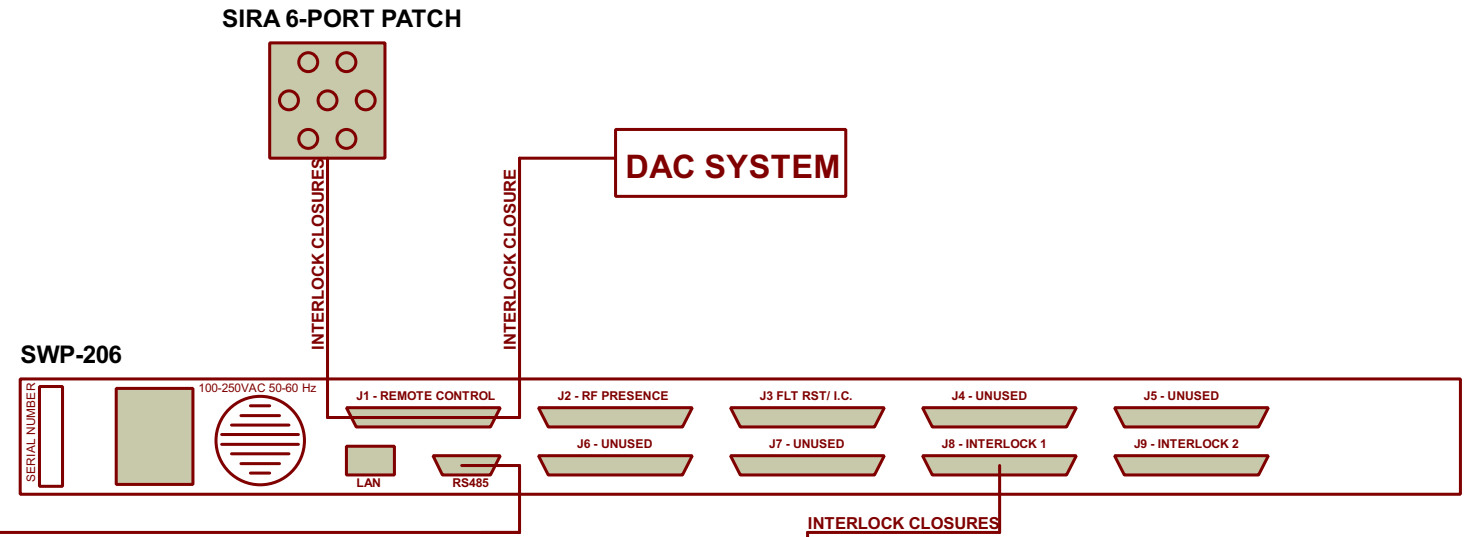
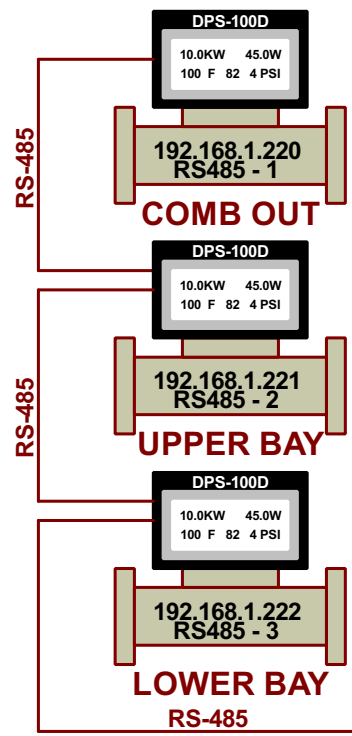


# SIRA 6-PORT BROADBAND PATCH PANEL

## INTERLOCK STEERING & FULL POWER CLOSURE

**NOTE: PATCH PANEL MUST HAVE DPDT INTERLOCK SWITCH OPTION INSTALLED**





**SYSTEM INTERLOCK / FULL POWER BLOCK DIAGRAM**



BROADCAST DEVICES INC.  
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**TITLE: CN TOWER FM COMBINER PROPOSAL**

AUTHOR: R KUMETZ

FILE NAME: CN FM Combiner.pdsprj

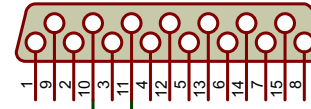
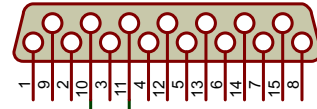
DWG NO: @DOCNO

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DATE: 14-May-24  
TIME: 14:41:32  
PAGE: 2/3

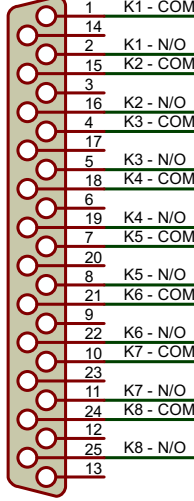
COMBINER INPUT #1 DPS-100D  
DB-15

REJECT LOAD #1 DPS-100D  
DB-15

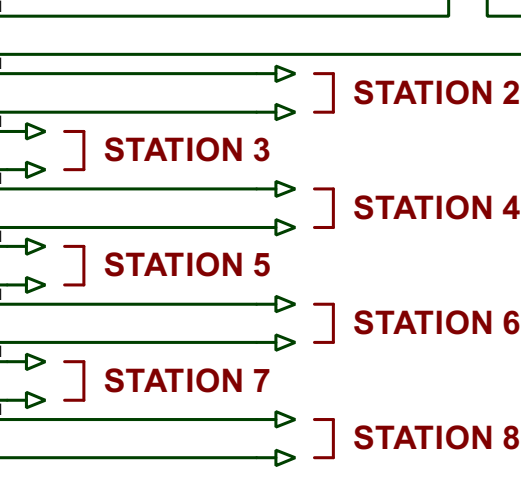


**SWP-206**

J8 - INTERLOCK 1



2100-80

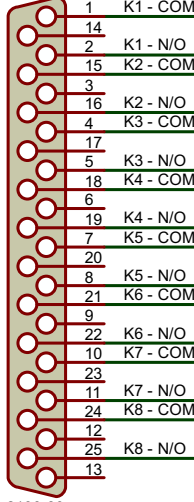


STATION 1 INTERLOCK

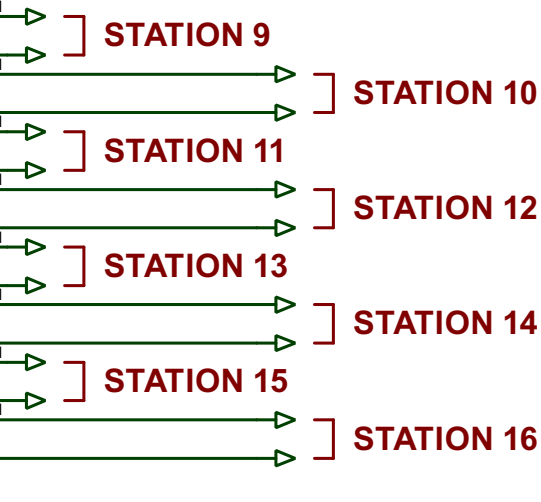
INTERLOCK INTERCONNECT TYPICAL UP TO 16 STATIONS

**SWP-206**

J9 - INTERLOCK 2

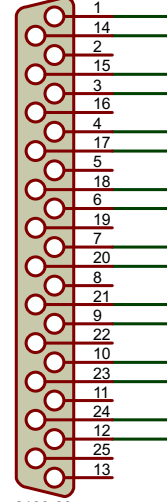


2100-80



**SWP-206**

J1 - REMOTE CTL



2100-80



UNUSED INTERLOCK INPUTS



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AUTHOR: R KUMETZ

FILE NAME: CN FM Combiner.pdsprj

DWG NO: @DOCNO

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#### **IV. Warranty**

Broadcast Devices, Inc. products are warranted against failure due to faulty materials or workmanship for a period of one year from the date of shipment to the ultimate user. The warranty covers repair or replacement of defective parts at the factory, provided the unit has been returned prepaid by the user. All shipments to the factory shall have affixed to the outside of the container a return authorization number obtained from the factory. The above warranty is void if the unit has been modified by the user outside of any recommendations from the factory or if the unit has been abused or operated outside of its electrical or environmental specifications. If customer conducted field tests suggest that the unit may be faulty, whether or not the unit is in warranty, a full report of the difficulty should be sent to Broadcast Devices, Inc. factory. The factory may suggest further tests or authorize return for factory evaluation.

Units sent to the factory should be well packed and shipped to Broadcast Devices, Inc. The current shipping address can be found by visiting our main web page: [www.broadcast-devices.com](http://www.broadcast-devices.com). Remember to affix the R. M. A. number to the outside of the carton. Any packages received without such R.M.A. number will be refused. Note: freight collect shipments will also be refused. When the unit has been received, inspected and tested, the customer will receive a report of the findings along with a quotation for recommended repairs, which are found falling outside of the standard warranty. Units returned for in-warranty repairs, which are found not to be defective will be subject to an evaluation and handling charge. In-warranty units will be repaired at no charge and returned via prepaid freight.

Out-of-warranty units needing repair require a purchase order and will be invoiced for parts, labor, and shipping charges.

When ordering replacement part contact any Broadcast Devices, Inc. authorized reseller. Always specify A) Part Description, and Quantity; B) Date of Purchase, Where Purchased; C) Any Special Shipping Instructions. Always specify a street address, as shipping companies cannot deliver to a postal box.

Broadcast Devices, Inc. is not responsible for any other manufacturer's warranty on original equipment. Nor are we responsible for any failure, damage, or loss of property that may occur due to the installation or operation of our equipment outside of recommended specifications.

Broadcast Devices, Inc. reserves the right to change materials, specifications, and features from time to time without prior notice.