bdi

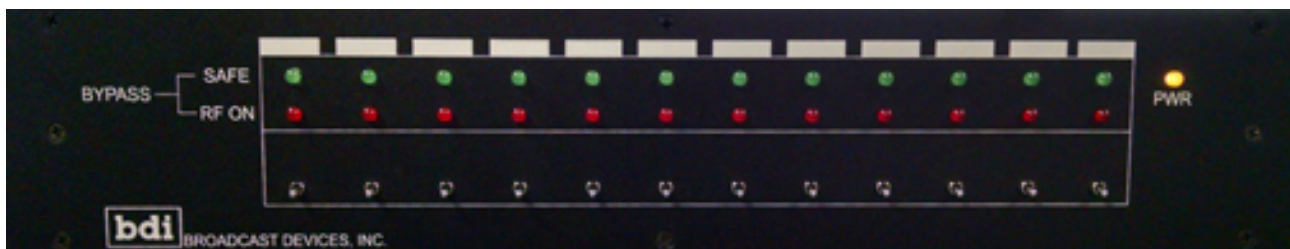**Broadcast Devices, Inc.**
Technical Reference Manual

RFS-120
RF Safety Status System

Broadcast Devices, Inc.

Tel. (914) 737-5032

Fax (914) 736-6916

Customer.Service@broadcast-devices.com

www.broadcast-devices.com

REV A.0 – 04 DEC 2015

Table of Contents

I.   System Description

The RFS-120 Safety Panel was designed to provide a single point monitor of the RF presence status of up to 12 BDI DPS-100D power monitors or any other type of RF indicator where a NC/C/NO set of closures are available for interconnection to the RFS-120 chassis. With the use of the BDI DPS-100D system the RFS-120 system provides active status of RF presence, safe condition, or system failure. Convenient modular connectors are used throughout to make the installation simple and fast.

The system front panel has 12 sets of SAFE and RF presence LED's. A set of bypass switches are also provided for maintenance and checkout of the system. The rear panel has provision to connect to an external alarm such as an indicator light or sound annunciator device.

Unpacking and Inspection

Carefully inspect the unit after unpacking and make certain that no damage has occurred during shipping. If damage is noted, contact the shipper immediately and file a claim for damages. Each unit is carefully packed and carries full insurance against damage. Inspect the packing list and make sure that the contents of the package match those described on the packing list.

Theory of Operation

The RFS-120 Safety Panel is designed to be used with up to 12 DPS-100D RF Power Meters to create an RF safety monitoring system. Additional RFS-120 RF Safety Panels may be daisy-chained to increase capacity in groups of 12 channels.

The Broadcast Devices DPS-100D RF Power Meter may be configured to allow Relay 2 to function as an RF Presence indication closure. Please review setup information for the DPS-100D power meter contained in the DPS-100D Technical Reference Manual for Relay 2 setup instructions. It is fail safe in that the relay is de-energized when RF is present above a user configurable threshold and below that threshold it is energized. If power to the DPS-100D is removed the closure defaults to the safe "RF PRESENT" state. For purposes of this discussion the energized (Normally Open – N/O) contact will be referred to as "SAFE" and the de-energized (Normally Closed – N/C) contact will be referred to as "RF PRESENT".

Each channel of the RFS-120 panel provides a SAFE (Green) and RF PRESENT (Red) LED indicating the status of that channel as well as a BYPASS switch to bypass an unused channel or a DPS-100D which may have been disconnected or have had its wiring compromised. These indicators reflect the following states:

RED ONLY   RF Above Threshold - NOT SAFE
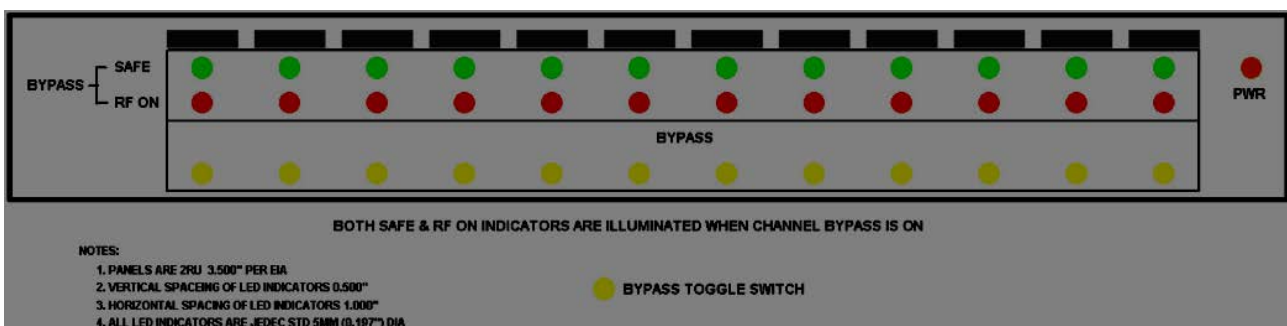GREEN ONLY   RF Below Threshold - SAFE

RED & GREEN	Channel Bypass – RF Status unknown (Bypass switch UP)
NO LED	Possible Wiring Problem or LED Failure – **ASSUME RF PRESENT!**

The bypass switch may also be used to test the LED's for an individual channel. By turning on the bypass mode (switch UP) both LED's will illuminate. Return the bypass switch to operating mode (down) to resume normal operation.

When the RF power measured by an individual DPS-100D is below the user configured threshold Relay 2 in that unit will be be energized with the Normally Open closure now closed signifying a SAFE condition. That condition causes the Green SAFE LED for the respective channel to illuminate and the Red RF Present LED is off. When the RF power is raised above that threshold Relay 2 is de-energized and the Normally Closed closure signifies an RF Present condition. Accordingly the Red RF Present LED will be illuminated and the Green SAFE LED will be off.

A yellow POWER LED is located on the upper right side of the RFS-120 to confirm that AC power is present.
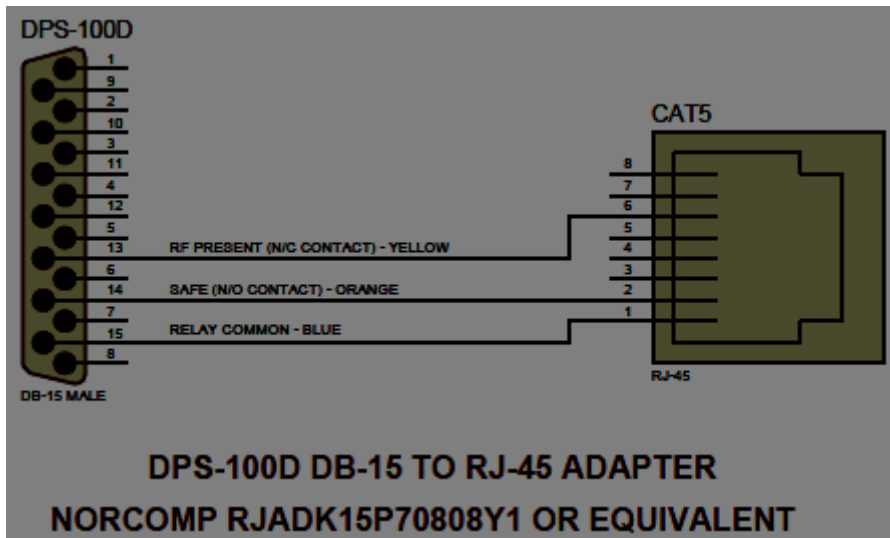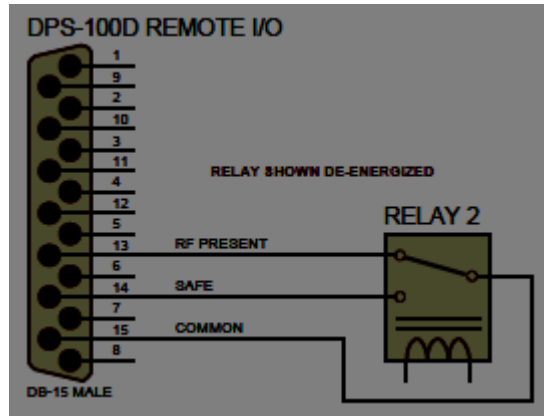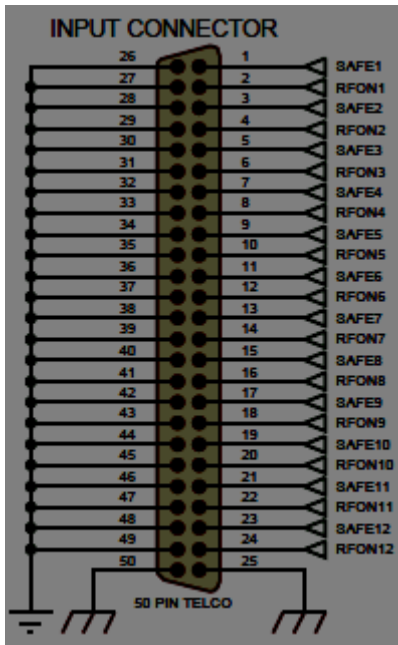
Notification of an RF Present (UNSAFE) condition for a single or multiple channels is provided a FORM-C relay contact via a Molex connector on the rear panel. This relay will be energized when all channels are in the SAFE state and de-energized when any channel reflects an RF Present state.
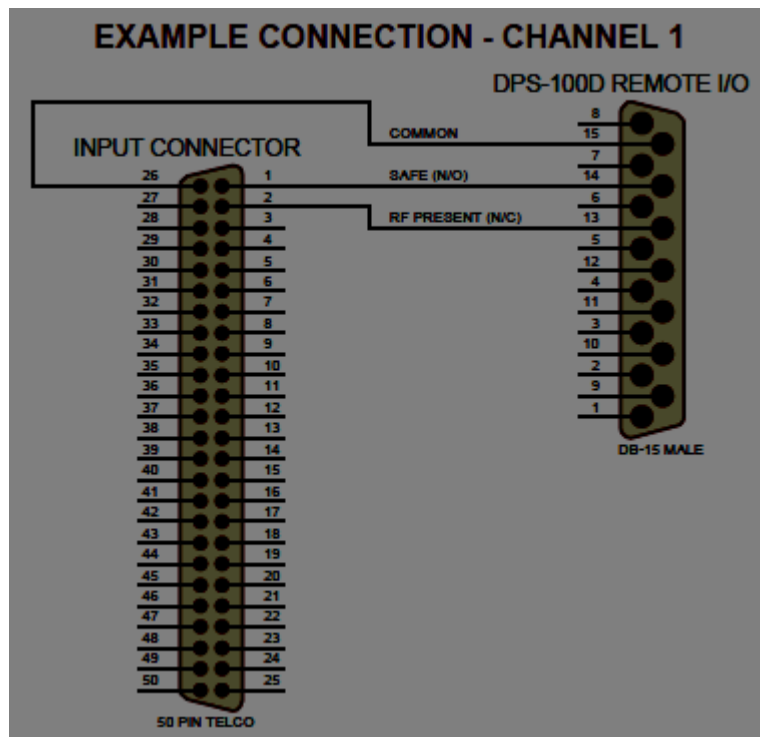

II.   Installation

The RFS-120 requires an AC power source of 100-240V 50/60hz. Connection is made via an IEC receptacle on the rear panel with a standard line cord.
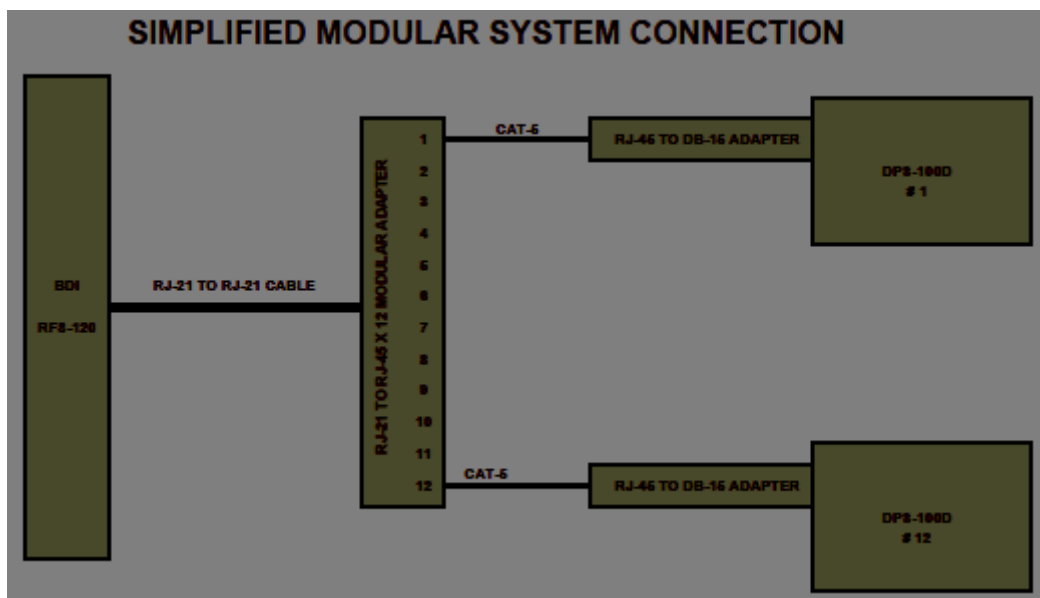
Connections to 12 individual DPS-100D RF Power Meters are made via a standard 50 Pin RJ-21 style telephone connector on the rear panel of the RFS-120. This mass termination may be converted to individual RJ-45 connectors allowing "plug and play" connection using off the shelf CAT5 cables. This conversion is accomplished using an L-COM E412M10BASE-T or similar RJ-21 to 8 RJ-45 adapter and an associated RJ-21 to RJ-21 50 conductor cable. Likewise, the DB-15 connector on the DPS-100D's are converted to RJ-45 connections using the DB-15 to RJ-45 adapters provided with the RFS-120.

INPUT CONNECTOR

Left pin	Right pin	Signal
26	1	SAFE1
27	2	RFON1
28	3	SAFE2
29	4	RFON2
30	5	SAFE3
31	6	RFON3
32	7	SAFE4
33	8	RFON4
34	9	SAFE5
35	10	RFON5
36	11	SAFE6
37	12	RFON6
38	13	SAFE7
39	14	RFON7
40	15	SAFE8
41	16	RFON8
42	17	SAFE9
43	18	RFON9
44	19	SAFE10
45	20	RFON10
46	21	SAFE11
47	22	RFON11
48	23	SAFE12
49	24	RFON12
50	25	

50 PIN TELCO

DPS-100D REMOTE I/O

DB-15 MALE — pins: 1, 9, 2, 10, 3, 11, 4, 12, 5, 13, 6, 14, 7, 15, 8

RELAY SHOWN DE-ENERGIZED

RELAY 2

- 13 — RF PRESENT
- 14 — SAFE
- 15 — COMMON

DPS-100D

DB-15 MALE — pins: 1, 9, 2, 10, 3, 11, 4, 12, 5, 13, 6, 14, 7, 15, 8

- 13 — RF PRESENT (N/C CONTACT) - YELLOW
- 14 — SAFE (N/O CONTACT) - ORANGE
- 15 — RELAY COMMON - BLUE

CAT5 — RJ-45, pins: 8, 7, 6, 5, 4, 3, 2, 1

DPS-100D DB-15 TO RJ-45 ADAPTER

NORCOMP RJADK15P70808Y1 OR EQUIVALENT

The drawing below illustrates the connections made from a single DPS-100D to the input connector on the RFS-120 rear panel. Connections are shown directly wired to for purposes of illustrating how each DPS-100D is connected to the RF Safety Panel.

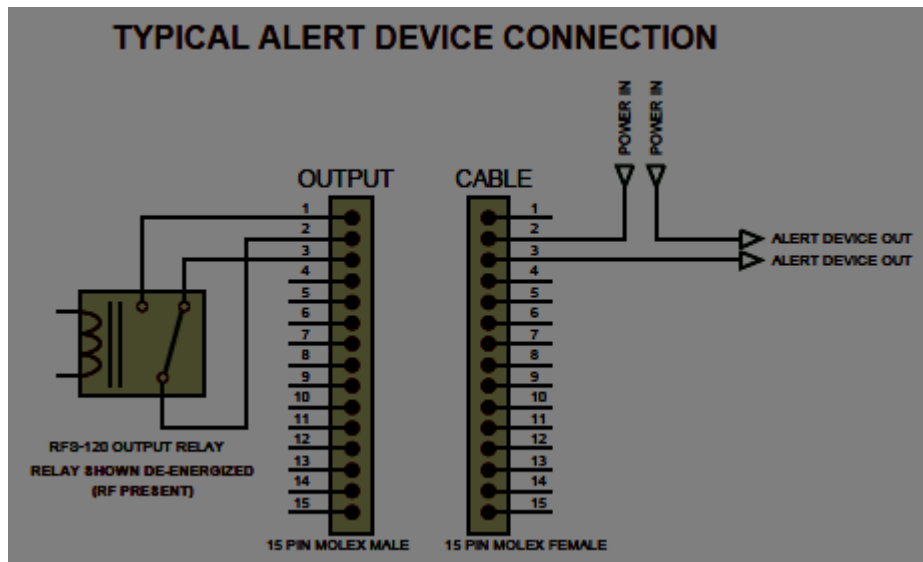**EXAMPLE CONNECTION - CHANNEL 1**

Installation labor in an actual system can be reduced substantially by using off the shelf telecom hardware: RJ-21 and CAT-5 cables, punchdown blocks, RJ-21 to RJ-45 adapters and the RJ-45 to DB-15 adapters provided with the RFS-120 may be used as shown below.
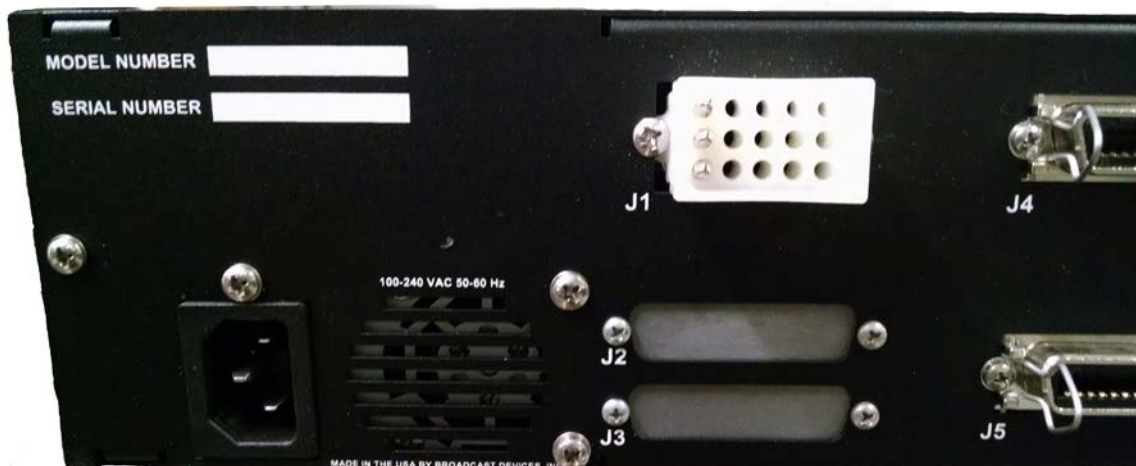

SIMPLIFIED MODULAR SYSTEM CONNECTION

The RFS-120 provides a single Form-C relay to drive one or more signaling devices such as a warning light or sounder. This circuit is rated for a maximum of 240VAC at 9.5A. Connections are provided via a 15 pin Molex type plug. A mating receptacle and crimp on pins are provided. Note when installing pins into the housing that the pin numbers are

molded into the plastic on the rear of the connector. The RFS-120 is a Fail-Safe device and as such, the output relay is energized in the "SAFE" (RF NOT present) state. In most cases connection to the alert device (light, klaxon, etc.) will be accomplished using the common and normally closed conctacts. Doing so will cause the alert device to illuminate or sound when RF is present or if power is disconnected from the RFS-120 causing a situation where the status of the RF presence is unknown.

J1 External Molex Connector Electrical Connection

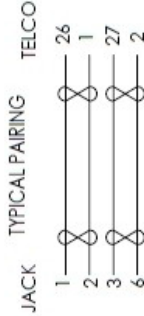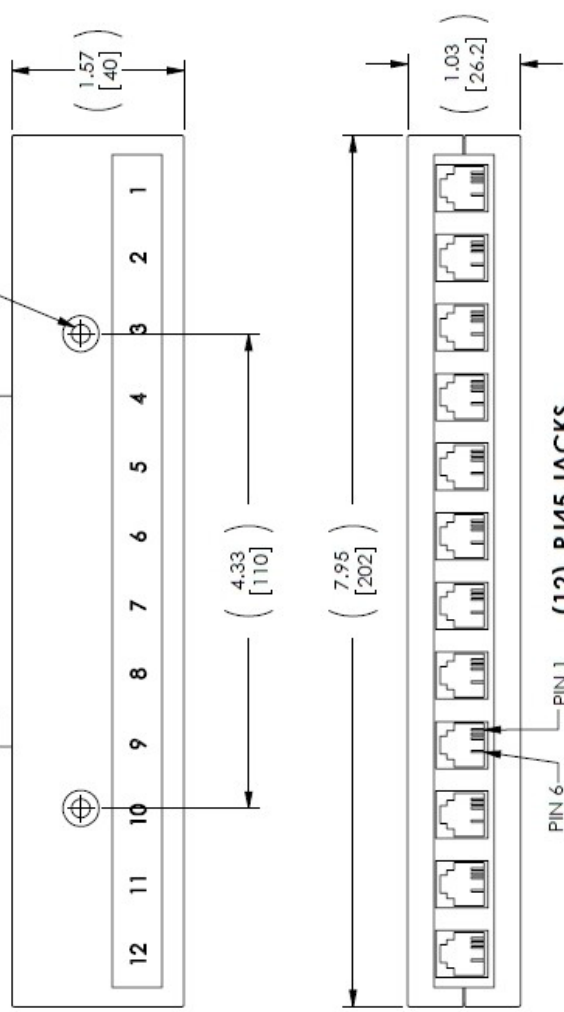## III.   Appendix A : L-COM Modular Adapter Pinout Diagram

WIRE MAP
(IN ACCORDANCE WITH STANDARD 10BASE-T PRACTICE)

JACK NO.	RJ45 PIN NO.	50 PIN CONNECTOR	JACK NO.	RJ45 PIN NO.	50 PIN CONNECTOR
1	1	26	7	1	38
	2	1		2	13
	3	27		3	39
	6	2		6	14
2	1	28	8	1	40
	2	3		2	15
	3	29		3	41
	6	4		6	16
3	1	30	9	1	42
	2	5		2	17
	3	31		3	43
	6	6		6	18
4	1	32	10	1	44
	2	7		2	19
	3	33		3	45
	6	8		6	20
5	1	34	11	1	46
	2	9		2	21
	3	35		3	47
	6	10		6	22
6	1	36	12	1	48
	2	11		2	23
	3	37		3	49
	6	12		6	24

NO CONNECTIONS TO TELCO CONTACTS 25 & 50

MODEL NUMBER	TELCO CONNECTOR
E412F10BASE-T	FEMALE
E412M10BASE-T	MALE

50 CONTACT TELCO MALE OR FEMALE CONNECTOR

2X Ø.158 MIN. THRU HOLE WITH Ø0.33 MIN. C'BORE

BRACKET FOR VELCRO STRAP (SUPPLIED) FOR SECURING CABLE CONNECTOR

(1.57) [40]
(4.33) [110]
(7.95) [202]
(1.03) [26.2]

(12) RJ45 JACKS

PIN 1 (TYP)
PIN 6 (TYP)

TYPICAL PAIRING

JACK — TELCO
1 — 26
2 — 1
3 — 27
6 — 2

NOTES:

1. HOUSING IS ABS PLASTIC, COLOR: GRAY.

2. EACH CLUSTER BAR IS INDIVIDUALLY PACKAGED IN A PLASTIC BAG WITH (2) 35mm [1.38] LONG WOOD SCREWS AND (1) PIECE OF DOUBLE SIDED MOUNTING TAPE OF THE SAME LENGTH AS THE ABS HOUSING.

3. EACH CLUSTER BAR HAS A SPECIAL MOUNTING STRAP HAVING APPROXIMATELY 50mm OF VELCRO HOOKS AND 50mm OF FELT. THERE IS A PULL TAB ON THE HOOKS END AND A HEAT SEALED LOOP ON THE FELT END.
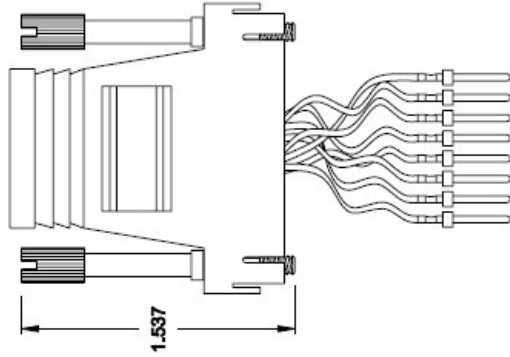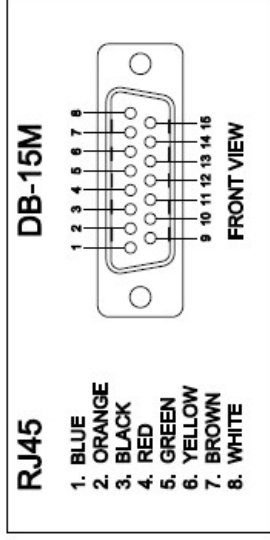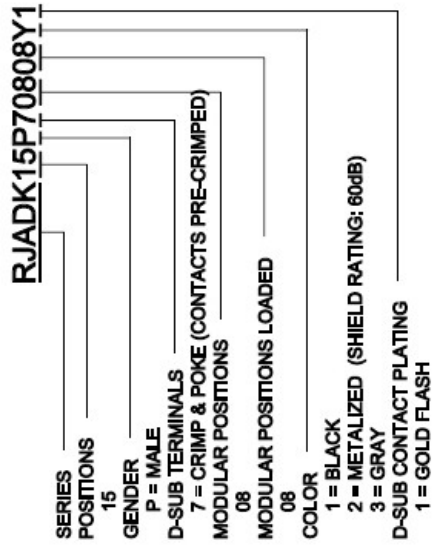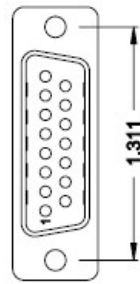
HEAT SEAL
STRAP IS LOOPED THROUGH SLOT ON BRACKET OF THIS TELCO CONNECTOR AND HEAT SEALED

TAB | VELCRO HOOKS | VELCRO FELT

MATERIAL:

HOOD: ABS UL 94V-HB

RJADK15P70808Y1

SERIES
POSITIONS
  15
GENDER
  P = MALE
D-SUB TERMINALS
  7 = CRIMP & POKE (CONTACTS PRE-CRIMPED)
MODULAR POSITIONS
  08
MODULAR POSITIONS LOADED
  08
COLOR
  1 = BLACK
  2 = METALIZED (SHIELD RATING: 60dB)
  3 = GRAY
D-SUB CONTACT PLATING
  1 = GOLD FLASH

DB-15M

RJ45

1. BLUE
2. ORANGE
3. BLACK
4. RED
5. GREEN
6. YELLOW
7. BROWN
8. WHITE

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15

FRONT VIEW

DESCRIPTION: RJ-45 TO 15-POSITION MALE D-SUB - PLASTIC & METALIZED PLASTIC

1.537

0.632

PIN 1

0.472

1.543

0.894

1.631

0.452

1.311

DRAWN: C. SMITH   DATE: 05-15-07
CHECKED: DATE:
SCALE: N.T.S.   SHEET 1   OF 1   REV 1
DWG NO.   RJADK15P70808Y1

NorComp

DO NOT SCALE FROM DRAWING

RoHS COMPLIANT

V.   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 from Broadcast Devices, Inc. dock. 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. Please email: customer.service@broadcast-devices.com

   Units sent to the factory should be well packed and shipped to Broadcast Devices, Inc. – Check www.broadcast-devices.com for current shipping address. Remember to affix the R.A. number to the outside of the carton. Any packages received without such R.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, 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. www.broadcast-devices.com

Tel. (914) 737-5032   Facsimile: (914) 736-6916

Email: customer.service@broadcast-devices.com