

# *IFB-828*

## *Service Manual*



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## **WARRANTY NOTICE**

See the enclosed warranty card for further details.

## **CUSTOMER SUPPORT**

Technical questions should be directed to:

Customer Service Department  
Bosch Security Systems, Inc.  
12000 Portland Avenue South  
Burnsville, MN 55337 USA  
Telephone: 877-863-4169  
Fax: 800-323-0498  
Info@rtsintercoms.com

Technical Questions EMEA  
Bosch Security Systems Technical Support EMEA  
[http://www.rtsintercoms.com/contact\\_main.php](http://www.rtsintercoms.com/contact_main.php)

## **RETURN SHIPPING INSTRUCTIONS**

Customer Service Department  
Bosch Security Systems, Inc. (Lincoln, NE)  
Telephone: 402-467-5321  
Fax: 402-467-3279  
Factory Service: 800-553-5992

Please include a note in the box which supplies the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s).

## **SHIPPING TO THE MANUFACTURER**

All shipments of product should be made via UPS Ground, prepaid (you may request from Factory Service a different shipment method). Any shipment upgrades will be paid by the customer. The equipment should be shipped in the original packing carton. If the original carton is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four (4) inches of excelsior or similar shock-absorbing material. All shipments must be sent to the following address and must include the Proof of Purchase for warranty repair. Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper, collect.

Factory Service Department  
Bosch Security Systems, Inc.  
8601 East Cornhusker Hwy.  
Lincoln, NE 68507 U.S.A.  
Attn: Service

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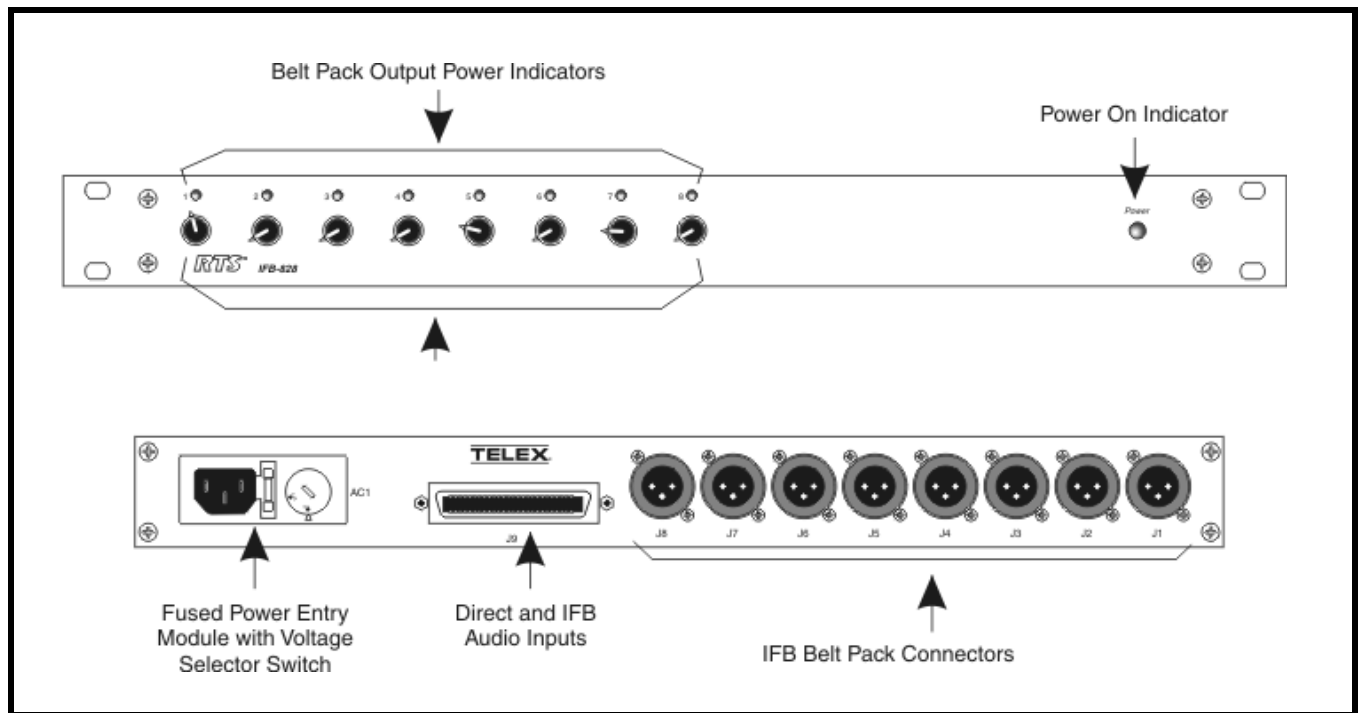


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## IFB-828 Description

The IFB-828 interfaces up to eight (8) RTS Systems' Model IFB-325, 4020, or 4030 IFB Belt Packs to any RTS Digital Matrix Intercom System, and it provides power to the belt packs.

The IFB-828 may also be used as a simple program interface to feed two (2) separate program sources to each of eight (8) 4020 or 4030 belt packs (16 program sources to eight (8) belt packs total).



**FIGURE 1.** IFB-828 Reference View

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## Installation in an RTS Digital Matrix

To **install an IFB-828 in an RTS Digital Matrix**, do the following:

1. Mount the IFB-828 in an equipment rack or bay.  
It should be positioned near eye level when sitting or standing to permit adjustment of the IFB program levels and to check the power indicator lights. There are no special ventilation requirements.

**IMPORTANT:** IFB-828 Location. The XLR connector outputs from the IFB-828 provide unbalanced audio and DC operating power to IFB belt packs. Therefore, very long cable runs (over several hundred feet) from the IFB-828 to the belt packs may result in diminished performance due to DC resistance in the cabling and noise induced by surrounding equipment. Select a location for the IFB-828 that is as close as possible to the belt packs, or use appropriate precautions (shielded cable, heavier gauge stranded wire, routing away from unshielded equipment, etc.) For broadcast application you will typically locate the IFB-828 in the audio booth near the talent location, and no special precautions are required.

2. Select 110 for 110/120V, 50/60Hz operation.  
OR  
Select 220 for 220/240V, 50/60Hz operation.
3. Connect a 25-pair telco cable to J9 on the back of the IFB-828.

4. Run this cable to the audio distribution point for the intercom system (punch blocks, etc.).
5. Using AZedit, configure the IFBs for your system.
6. Assign the IFBs to the appropriate keypanel keys.
7. For each IFB you set up:
  - a. Connect from the output port of the matrix (defined in step 5) to an available IFB input of the IFB-828. Make the connects at the audio distribution point where you have connected the cable from J9 of the IFB-828. See Table 1 on page 5 for pin numbers.
  - b. Connect the IFB program audio source both to the intercom port that you defined as the program input port of the matrix (in step 5) AND also connect the IFB program audio source to the direct program input of the selected channel of the IFB-828.
8. Connect from the appropriate 3-pin XLR output connector of the IFB-828 to the LINE (or LINES) connector of the IFB belt pack. Typical cable wiring is shown in Figure 2 on page 6.

**NOTE:** In the factory-default configuration, the IFB-325 belt packs receive IFB audio on pin 3 of its XLR connector. In this configuration, the belt pack's internal shorting plug J3 is set to pins 2 and 3 shorted. This is not the correct configuration for use with the IFB-828. To change the setting, open the belt pack and reset the J3 shorting plug so that pins 4 and 5 are shorted. Refer to the IFB-325 User Manual (P/N 93507448000) for further information.

9. Connect an earset to the IFB belt pack. The Model IFB-325 accepts only monaural earsets. The models 4020 and 4030 accept either monaural or stereo earsets. However, for the standard application of the IFB-828, only a monaural earset is required.

**Monaural Earset Pin Out:**

Tip: IFB audio and direct program mix.

Sleeve: Common

**Stereo Earset Pin Out:**

Tip: IFB audio and direct program mix (interrupt)

Ring: Direct program audio (non-interrupt)

Sleeve: Common

10. Set all belt pack volume controls and all level controls on the IFB-828 to minimum.
11. Plug in the IFB-828 power cord.

The main power on the front panel should light, and each channel LED should light indicating that power is being supplied to the belt pack output on that channel. Ensure that the matrix is operation and that all program sources are operational.
12. During normal operation (no IFB interrupts activated) have each talent position adjust their belt pack volume control for a comfortable program listening level.

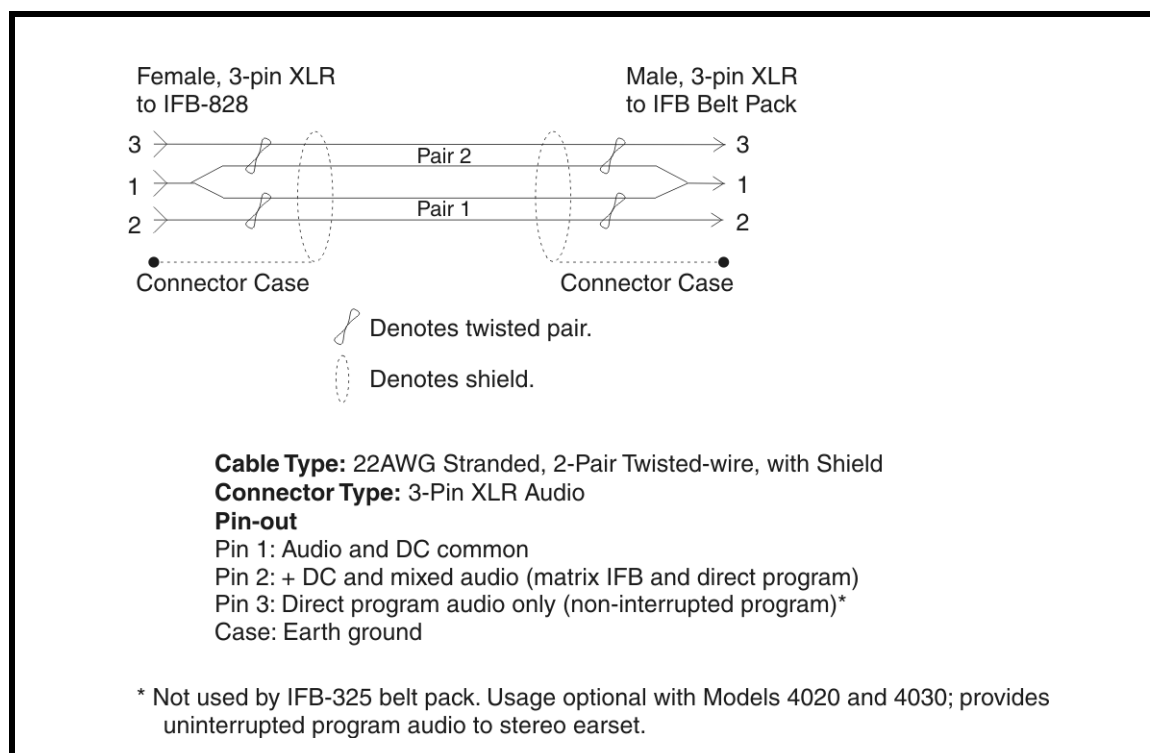
Use the interrupt control on a Model 4020 or 4030 belt pack.
13. For each IFB:
  - a. Activate the keypanel key assigned to the IFB.

The program audio should be interrupted at the associated IFB belt pack, and the mic audio from the keypanel becomes audible.
  - b. While the IFB key is active, adjust the appropriate level control on the front panel of the IFB-828 to mix the desired amount of direct program audio back into the keypanel's mic audio signal.

When the key is released, the mic audio should cut off, and the normal program audio level restores.

**TABLE 1.** Input Connector Pin Out (J9)

Pin Numbers		Description
+ Input	- Input	
1	26	Channel 1 direct program input
2	27	Channel 1 IFB input (from Matrix)
3	28	No connection
4	29	Channel 2 direct program input
5	30	Channel 2 IFB input (from Matrix)
6	31	No Connection
7	32	Channel 3 direct program input
8	33	Channel 3 IFB input (from Matrix)
9	34	No Connection
10	35	Channel 4 direct program input
11	36	Channel 4 IFB input (from Matrix)
12	37	No Connection
13	38	Channel 5 direct program input
14	39	Channel 5 IFB input (from Matrix)
15	40	No Connection
16	41	Channel 6 direct program input
17	42	Channel 6 IFB input (from Matrix)
18	43	No Connection
19	44	Channel 7 direct program input
20	45	Channel 7 IFB input (from Matrix)
21	46	No Connection
22	47	Channel 8 direct program input
23	48	Channel 8 IFB input (from Matrix)
24	49	No Connection
25	50	No Connection



**FIGURE 2.** IFB Belt Pack Interconnect Cable Wiring Diagram

### *Using the IFB-828 as a Simple Program Interface with 4020 and 4030 Belt Packs*

Use Table 1 on page 5 and the cable wiring in Figure 2 to connect one (1) or two (2) program sources to each IFB-828 channel. In this application, each direct program input at the IFB-828 feeds to the non-interrupt channel of the belt pack, and the level is adjusted by the NON-INTERRUPT control on the belt pack; each IFB input feeds to the interrupt channel and is adjusted by the INTERRUPT control. The control on the IFB-828 front panel can be used to mix the NON-INTERRUPT audio into the INTERRUPT audio.



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## *Specifications*

### ***Dimensions***

19" wide x 1.75" high x 7.5" deep (483mm x 44.5mm x 191mm)

### ***Input Power Requirements***

110/120 or 220/240 VAC, 50/60Hz selectable via a back panel switch

### ***Audio Inputs***

Type: Balanced (transformer coupled)

Level: +4 to +8dBu

Impedance: Approximately 600 Ohms

### ***Audio Outputs***

Type: Unbalanced

Level: -10 to -6dBu

### ***Output Power (each IFB belt pack channel)***

+24VDC, 160mA, not to exceed 750mA total.

### ***Connectors***

Input (J9)

Type: 50-pin telco

Pin Out: see Table 1 on page 5

Outputs (J1 to J8)

Type: 3-pin male XLR

Pin 1: Audio and DC Common

Pin 2: +IFB Audio (interrupt audio) and +24VDC

Pin 3: +Direct program audio (non-interrupt audio)

## IFB-828 Mechanical Assembly Parts

90007094005 / 90007094006

QTY	Description	Part Number
1	Transformer, Subassembly	90207094000
1	CONN D HDWE KIT=KY	8800102463
1	A/C CORD/CONN 18GA	8800102668
1	A/C ENTRY MODULE	8800117313
9	CONN. 100SP 2POS 24	8800127838
1	FUSE 630mA 5MMX 20M	PAS000130000
1	LED 5V GN PNL MNT W	8800131495
2	IDE PNL 7"	8800144463
8	KNOB POINTER 15MM	8800156636
8	KNOB 15MM 1/4 SHFT	8800157458
8	LED GRN PNL MNT	8800191073
1	COVER 7" TOP/BTM	8800218428
8	KNOB CAP 15MM BLK	8800243720
1	PCB ASSY IFB POWER	90307094000
1	FRONT PANEL IFB828	90707094000
1	REAR PANEL IFB828	90807094000
1	BOTTOM PANEL	91007094000

## IFB-828 PC Board Electrical Parts

90307094000

Ref Des	Description	Part No.
C1	CAPACITOR, EL, 1000 UF, 50V	PAS000104004
C2	CAPACITOR, CN, 0.1 UF, 50V	52676-613
C11	CAPACITOR, EL, 10 UF, 50V	51821-639
C12	CAPACITOR, CM, 0.1 UF, 50V	52676-613
C13	CAPACITOR, EL, 10 UF, 50V	51821-639
C21	CAPACITOR, EL, 10 UF, 50V	51821-639
C22	CAPACITOR, CM, 0.1 UF, 50V	52676-613
C23	CAPACITOR, EL, 10 UF, 50V	51821-639
C31	CAPACITOR, EL, 10 UF, 50V	51821-639
C32	CAPACITOR, CM, 0.1 UF, 50V	52676-613
C33	CAPACITOR, EL, 10 UF, 50V	51821-639

Ref Des	Description	Part No.
C41	CAPACITOR, EL, 10 UF, 50V	51821-639
C42	CAPACITOR, CM, 0.1 UF, 50V	52676-613
C43	CAPACITOR, EL, 10 UF, 50V	51821-639
C51	CAPACITOR, EL, 10 UF, 50V	51821-639
C52	CAPACITOR, CM, 0.1 UF, 50V	52676-613
C53	CAPACITOR, EL, 10 UF, 50V	51821-639
C61	CAPACITOR, EL, 10 UF, 50V	51821-639
C62	CAPACITOR, CM, 0.1 UF, 50V	52676-613
C63	CAPACITOR, EL, 10 UF, 50 V	51821-639
C71	CAPACITOR, EL, 10 UF, 50 V	51821-639
C72	CAPACITOR, CM, 0.1 UF, 50 V	52676-613
C73	CAPACITOR, EL, 10 UF, 50 V	51821-639
C81	CAPACITOR, EL, 10 UF, 50 V	51821-639
C82	CAPACITOR, CM, 0.1 UF, 50 V	52676-613
C83	CAPACITOR, EL, 10 UF, 50 V	51821-639
D1	DIODE, BRIDGE, 2A, 1000V, BR810DF	558011-000
D11	DIODE, 1N4004, 400 V	50745-005
D13	DIODE, 1N4004, 400 V	50745-005
D21	DIODE, 1N4004, 400 V	50745-005
D22	DIODE, 1N4004, 400 V	50745-005
D23	DIODE, 1N4004, 400 V	50745-005
D31	DIODE, 1N4004, 400 V	50745-005
D32	DIODE, 1N4004, 400 V	50745-005
D33	DIODE, 1N4004, 400 V	50745-005
D41	DIODE, 1N4004, 400 V	50745-005
D42	DIODE, 1N4004, 400 V	50745-005
D42	DIODE, 1N4004, 400 V	50745-005
D51	DIODE, 1N4004, 400 V	50745-005
D52	DIODE, 1N4004, 400 V	50745-005
D53	DIODE, 1N4004, 400 V	50745-005
D61	DIODE, 1N4004, 400 V	50745-005
D62	DIODE, 1N4004, 400 V	50745-005
D63	DIODE, 1N4004, 400 V	50745-005
D71	DIODE, 1N4004, 400 V	50745-005
D72	DIODE, 1N4004, 400 V	50745-005
D73	DIODE, 1N4004, 400 V	50745-005
D81	DIODE, 1N4004, 400 V	50745-005
D82	DIODE, 1N4004, 400 V	50745-005
D83	DIODE, 1N4004, 400 V	50745-005
J1	CONNECTOR, RA XLR, M-3	59892-003
J2	CONNECTOR, RA XLR, M-3	59892-003
J3	CONNECTOR, RA XLR, M-3	59892-003

Ref Des	Description	Part No.
J4	CONNECTOR, RA XLR, M-3	59892-003
J5	CONNECTOR, RA XLR, M-3	59892-003
J6	CONNECTOR, RA XLR, M-3	59892-003
J7	CONNECTOR, RA XLR, M-3	59892-003
J8	CONNECTOR, RA XLR, M-3	59892-003
P1	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P2	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P3	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P4	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P5	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P6	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P7	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P8	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P9	CONNECTOR, ST POLARIZED, 0.100, M-2	57763-402
P10	CONNECTOR, ST LOCKING, 0.156, M-3	57762-503
R1	RESISTOR, CF, 1.8K OHM, 5%, 1W	52154-629
R2	RESISTOR, CF, 1.2K OHM, 5%, 1/2W	52154-456
R3	RESISTOR, CF, 1.2K OHM, 5% 1/2W	52154-456
R4	RESISTOR, CF, 1.2K OHM, 5% 1/2W	52154-456
R5	RESISTOR, CF, 1.2K OHM, 5% 1/2W	52154-456
R6	RESISTOR, CF, 1.2K OHM, 5% 1/2W	52154-456
R7	RESISTOR, CF, 1.2K OHM, 5% 1/2W	52154-456
R8	RESISTOR, CF, 1.2K OHM, 5% 1/2W	52154-456
R9	RESISTOR, CF, 1.2K OHM, 5% 1/2W	52154-456
R11	POTENTIOMETER, 100 OHM, 10%, 1W	523015-000
R12	RESISTOR, MF, 2.26K OHM, 1%, 1/2W	54054-226

Ref Des	Description	Part No.
R13	RESISTOR, MF, 124 OHM, 1%, 1/4W	54042-124
R14	RESISTOR, WW, 10 OHM, 10%, 5W	50155-011
R21	POTENTIOMETER, 100 OHM, 10%, 1W	523015-000
R22	RESISTOR, MF, 2.26K OHM, 1%, 1/2 W	54054-226
R23	RESISTOR, MF, 124 OHM, 1%, 1/4W	54042-124
R24	RESISTOR, WW, 10 OHM, 10%, 5W	50155-011
R31	POTENTIOMETER, 100 OHM, 10%, 1W	523015-000
R32	RESISTOR, MF, 2.26K OHM, 1%, 1/2 W	54054-226
R33	RESISTOR, MF, 124 OHM, 1%, 1/4W	54042-124
R34	RESISTOR, WW, 10 OHM, 10%, 5W	50155-011
R41	POTENTIOMETER, 100 OHM, 10%, 1W	523015-000
R42	RESISTOR, MF, 2.26K OHM, 1%, 1/2 W	54054-226
R43	RESISTOR, MF, 124 OHM, 1%, 1/4W	54042-124
R44	RESISTOR, WW, 10 OHM, 10%, 5W	50155-011
R51	POTENTIOMETER, 100 OHM, 10%, 1W	523015-000
R52	RESISTOR, MF, 2.26K OHM, 1%, 1/2 W	54054-226
R53	RESISTOR, MF, 124 OHM, 1%, 1/4W	54042-124
R54	RESISTOR, WW, 10 OHM, 10%, 5W	50155-011
R61	POTENTIOMETER, 100 OHM, 10%, 1W	523015-000
R62	RESISTOR, MF, 2.26K OHM, 1%, 1/2 W	54054-226
R63	RESISTOR, MF, 124 OHM, 1%, 1/4W	54042-124
R64	RESISTOR, WW, 10 OHM, 10%, 5W	50155-011
R71	POTENTIOMETER, 100 OHM, 10%, 1W	523015-000
R72	RESISTOR, MF, 2.26K OHM, 1%, 1/2 W	54054-226

Ref Des	Description	Part No.
R73	RESISTOR, MF, 124 OHM, 1%, 1/4W	54042-124
R74	RESISTOR, WW, 10 OHM, 10%, 5W	50155-011
R81	POTENTIOMETER, 100 OHM, 10%, 1W	523015-000
R82	RESISTOR, MF, 2.26K OHM, 1%, 1/2 W	54054-226
R83	RESISTOR, MF, 124 OHM, 1%, 1/4W	54042-124
R84	RESISTOR, WW, 10 OHM, 10%, 5W	50155-011
T11	TRANSFORMER, AUDIO	559001-000
T12	TRANSFORMER, AUDIO	559001-000
T21	TRANSFORMER, AUDIO	559001-000
T22	TRANSFORMER, AUDIO	559001-000
T31	TRANSFORMER, AUDIO	559001-000
T32	TRANSFORMER, AUDIO	559001-000
T41	TRANSFORMER, AUDIO	559001-000
T42	TRANSFORMER, AUDIO	559001-000
T51	TRANSFORMER, AUDIO	559001-000
T52	TRANSFORMER, AUDIO	559001-000
T61	TRANSFORMER, AUDIO	559001-000
T62	TRANSFORMER, AUDIO	559001-000
T71	TRANSFORMER, AUDIO	559001-000
T72	TRANSFORMER, AUDIO	559001-000
T81	TRANSFORMER, AUDIO	559001-000
T82	TRANSFORMER, AUDIO	559001-000
VR1	IC, VOLTAGE REGULATOR, LM317	53290-000
VR2	IC, VOLTAGE REGULATOR, LM317	53290-000
VR3	IC, VOLTAGE REGULATOR, LM317	53290-000
VR4	IC, VOLTAGE REGULATOR, LM317	53290-000
VR5	IC, VOLTAGE REGULATOR, LM317	53290-000
VR6	IC, VOLTAGE REGULATOR, LM317	53290-000
VR7	IC, VOLTAGE REGULATOR, LM317	53290-000
VR8	IC, VOLTAGE REGULATOR, LM317	53290-000
C14	CAPACITOR, CEREMIC DISC, 0.001UF 500V	52157-022

Ref Des	Description	Part No.
C24	CAPACITOR, CEREMIC DISC, 0.001UF 500V	52157-022
C34	CAPACITOR, CEREMIC DISC, 0.001UF 500V	52157-022
C44	CAPACITOR, CEREMIC DISC, 0.001UF 500V	52157-022
C54	CAPACITOR, CEREMIC DISC, 0.001UF 500V	52157-022
C64	CAPACITOR, CEREMIC DISC, 0.001UF 500V	52157-022
C74	CAPACITOR, CEREMIC DISC, 0.001UF 500V	52157-022
C84	CAPACITOR, CEREMIC DISC, 0.001UF 500V	52157-022
R10	RESISTOR, MF, 10.0K OHM, 1% 1/2W	54055-100
R15	RESISTOR, MF, 10.0K OHM, 1% 1/2W	54055-100
R16	RESISTOR, MF, 10.0K OHM, 1% 1/2W	54055-100
R17	RESISTOR, MF, 10.0K OHM, 1% 1/2W	54055-100
R18	RESISTOR, MF, 10.0K OHM, 1% 1/2W	54055-100
R19	RESISTOR, MF, 10.0K OHM, 1% 1/2W	54055-100
R20	RESISTOR, MF, 10.0K OHM, 1% 1/2W	54055-100
R25	RESISTOR, MF, 10.0K OHM, 1% 1/2W	54055-100

# Drawings

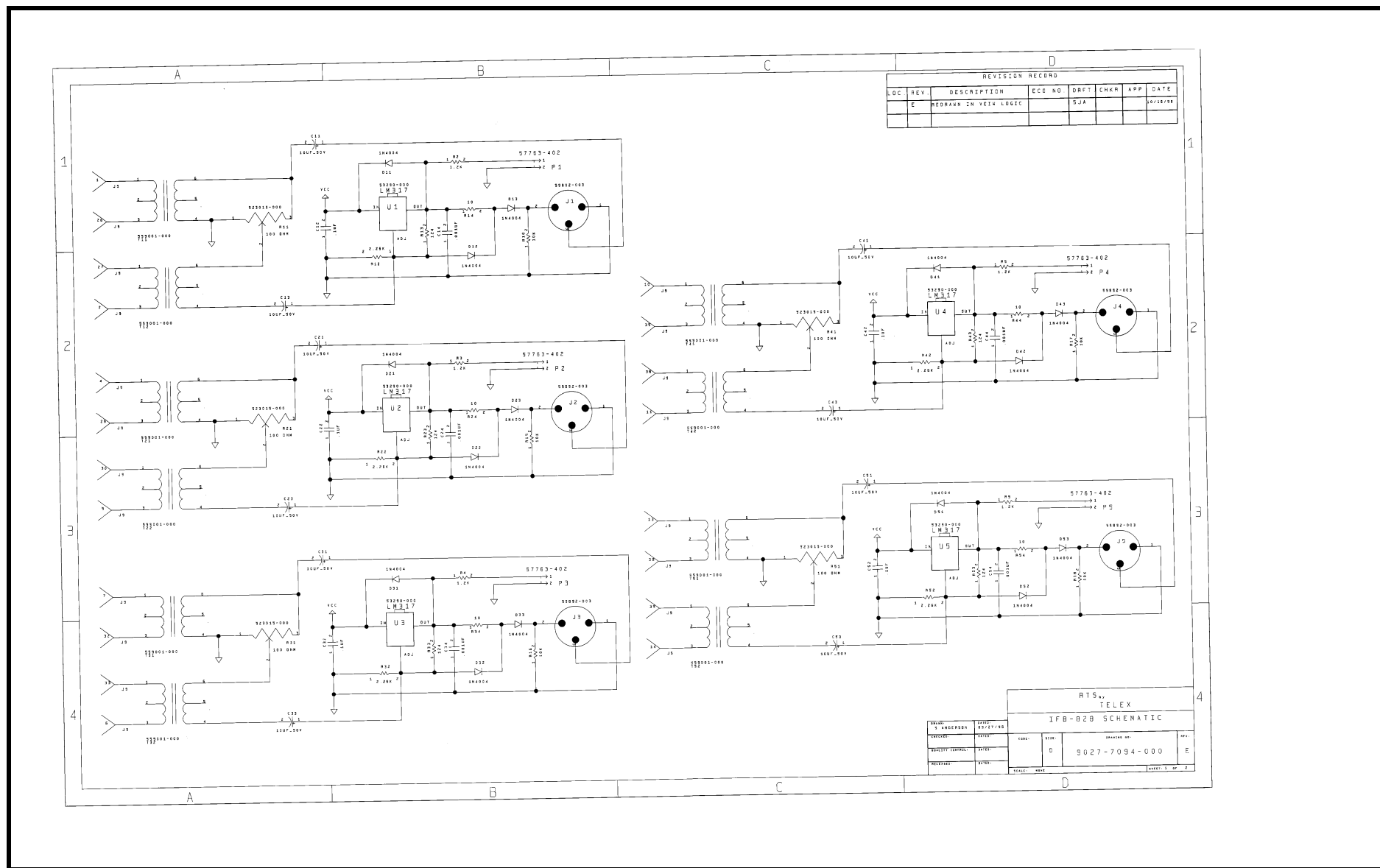


FIGURE 3. 9027-7094-000 (page 1)



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*Notes*

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