

IFB-828

Service Manual



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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

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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).

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

Table of Contents

| | |
|--|----|
| <i>IFB-828 Description</i> | 3 |
| <i>Installation in an RTS Digital Matrix</i> | 3 |
| <i>Using the IFB-828 as a Simple Program Interface with 4020 and 4030 Belt Packs</i> | 6 |
| <i>Specifications</i> | 7 |
| <i>IFB-828 Mechanical Assembly Parts</i> | 8 |
| 90007094005 / 90007094006 | 8 |
| <i>IFB-828 PC Board Electrical Parts</i> | 8 |
| 90307094000 | 8 |
| <i>Drawings</i> | 11 |
| <i>Notes</i> | 13 |

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).

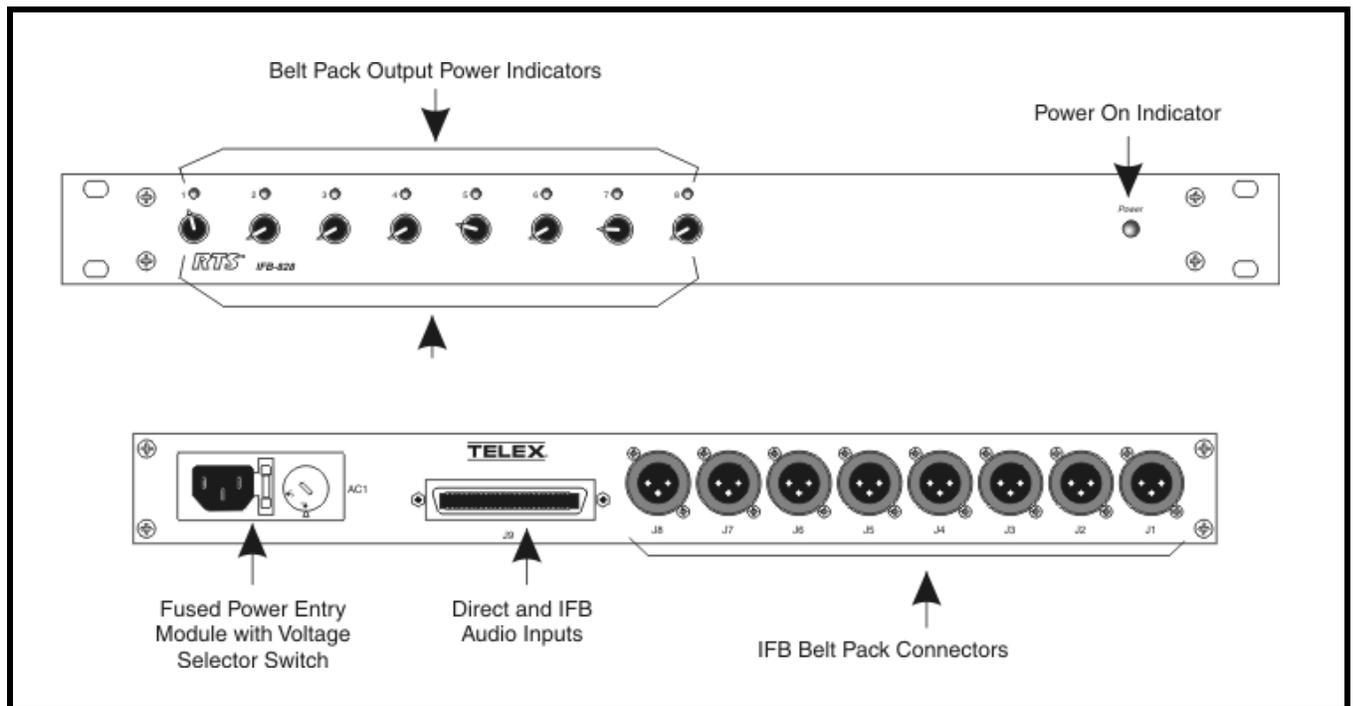


FIGURE 1. IFB-828 Reference View

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 |

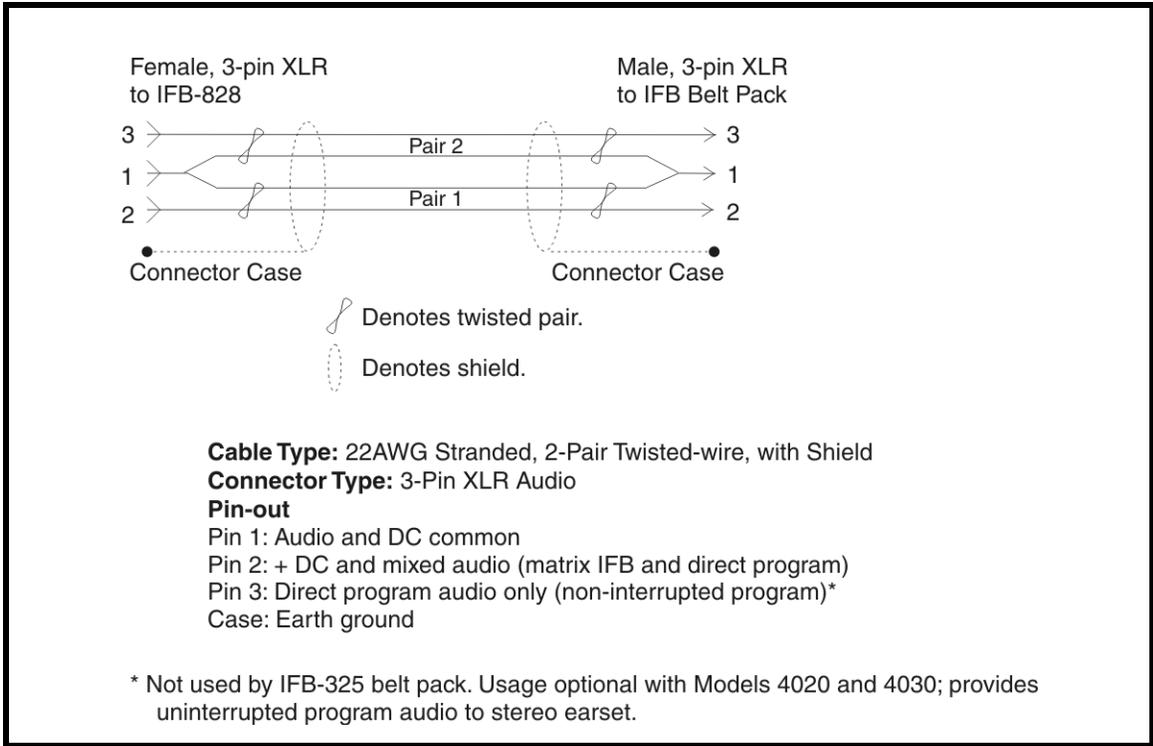


FIGURE 2. IFB Belt Pack Interconnect Cable Wiring Diagram

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.

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 |

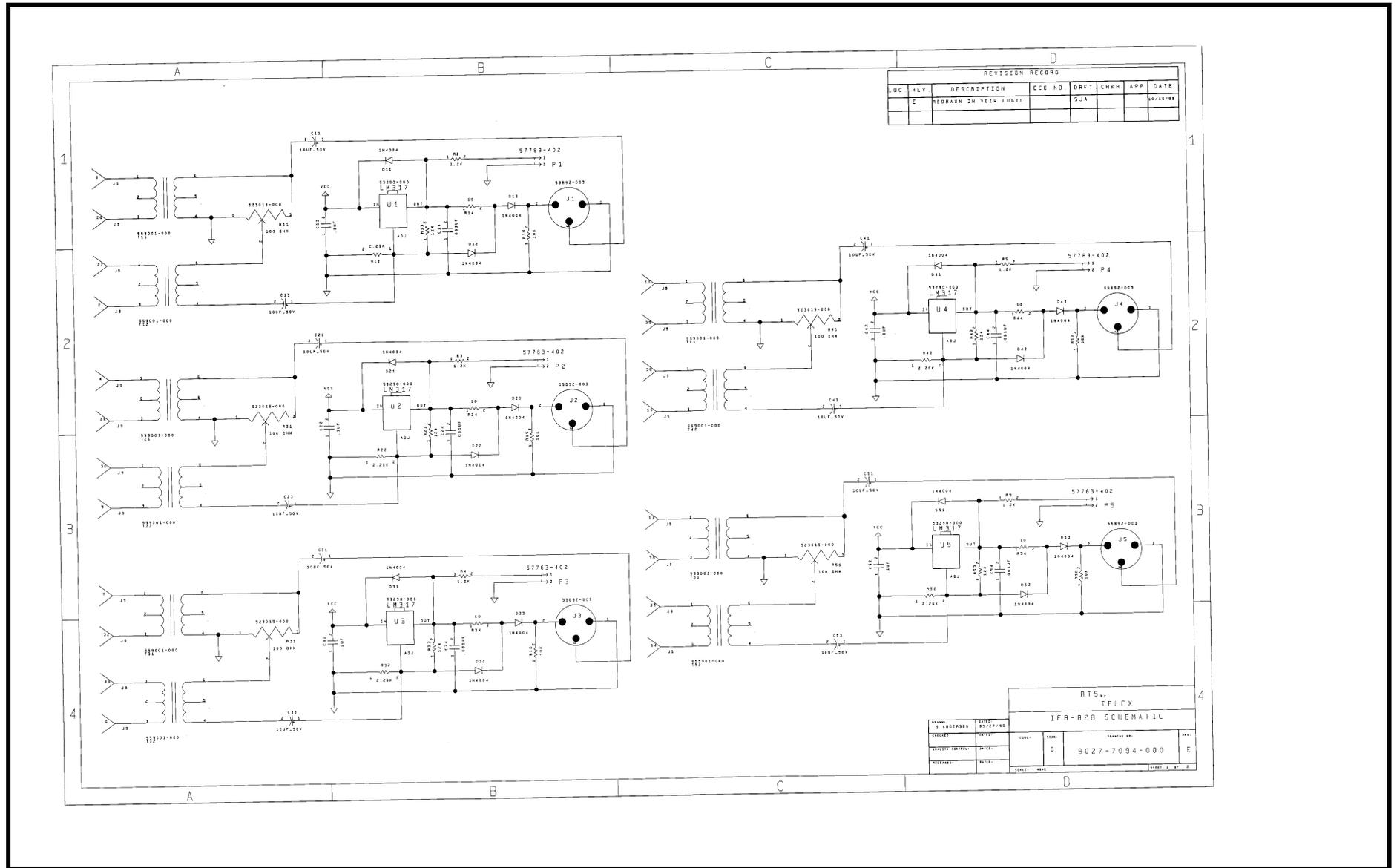
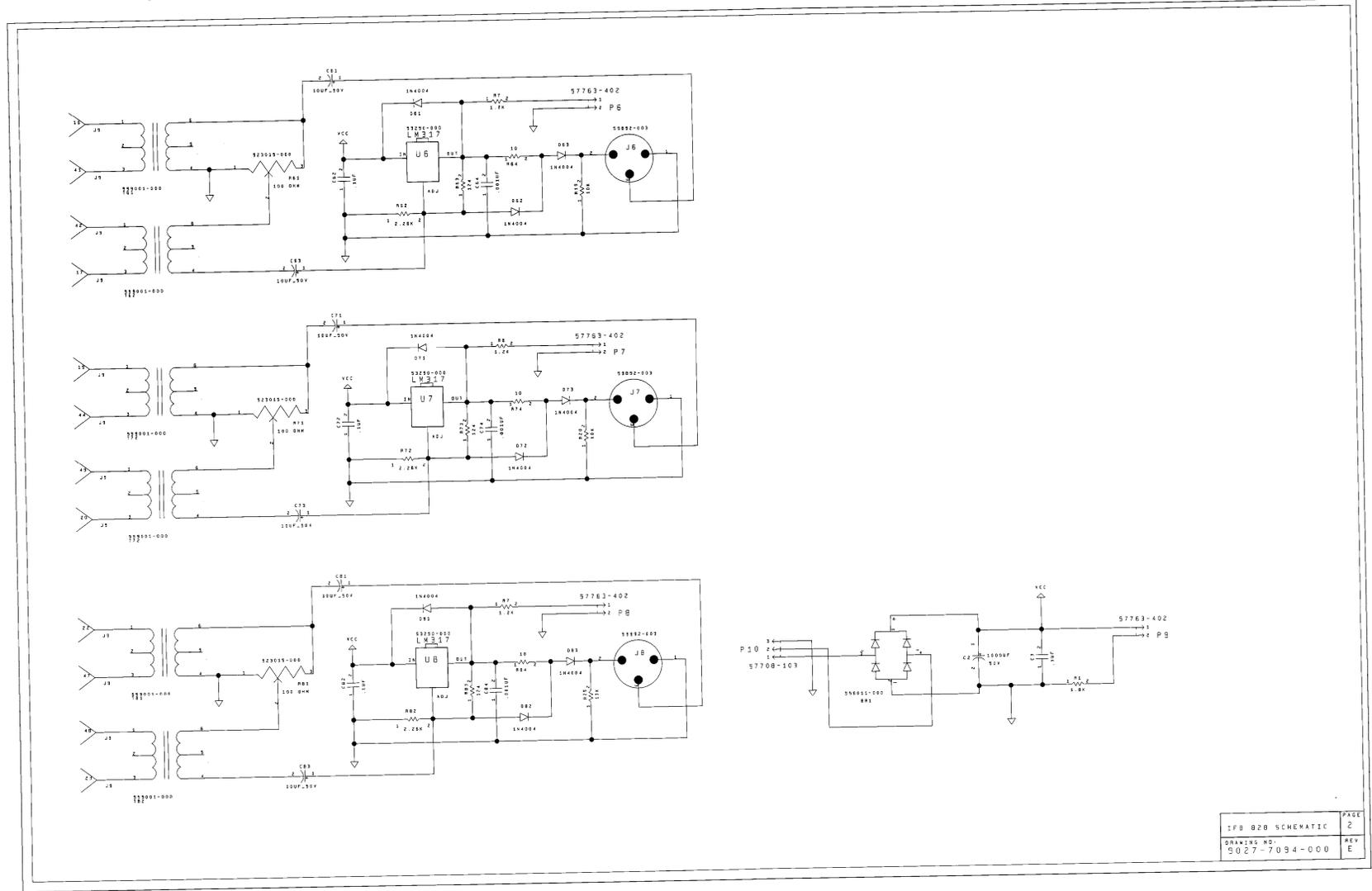


FIGURE 3. 9027-7094-000 (page 1)



| | |
|---------------------------|------|
| IFB B2B SCHEMATIC | PAGE |
| DRAWING NO. 9027-7094-000 | 2 |
| | REV |
| | E |

FIGURE 4. 9027-7094-000 (page 2)

Notes
