USER MANUAL

TIF-4000 Frame
&
TIF-4000
Digital Hybrid Telephone Line

RTS™

9350-7812-000 Rev B 10/2005

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Copyright Notice

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See the enclosed warranty card for further details.

Unpacking and Inspection
Immediately upon receipt of the equipment, inspect the shipping container and the contents carefully for any discrepancies or damage. Should there be any, notify factory service of any discrepancies in the shipment. Notify the freight company and factory service of any shipping damage.

Customer Support
Technical questions should be directed to:

Customer Service Department
RTS/Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A.
Telephone: (402) 467-5321
Fax: (402) 467-3279
Factory Service (800) 553-5992

Return Shipping Instructions
Customer Service Department
Telex Communications, Inc. (Lincoln, Nebraska)
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 Manufacturer for Repair or Adjustment
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 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
Telex Communications, Inc.
8601 Cornhusker Hwy
Lincoln, NE 68507 U.S.A
Attn: Service

Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper, collect.

What's Included in this Box?
The TIF-4000 shipping box should contain the following items:

1	TIF-4000 Frame	9000-7812-000
1	TIF-4000 Backcard	9030-7812-000
1	Power Supply	9020-7812-000
1	IEC Power Cord	8800102668
1	User Manual	9350-7812-000
1	Software disk containing country specific telephone system configuration files	9015-7674-000

If anything is missing or damaged, contact the shipper or Telex immediately.

Table of Contents

Introduction

This manual describes the installation, programming, and operating procedures for the RTS Model TIF-4000 Digital Hybrid Telephone Line Interface Frame. Since the TIF-4000 functions as a keypanel, the user may also need to refer to the manuals and/or on-line help files for AZedit, for information on configuring certain features.

IMPORTANT!: Be sure to review any recently added supplemental information before proceeding. Supplements are placed at the back of the manual.

Description

The TIF-4000 is a frame of up to 12 digital telephone interface cards (TIF-4000 front card), with a redundant power supply designed to be compatible with ADAM, ADAM CS, and Zeus intercom systems. It provides bi-directional communication between the intercom matrix and a standard DTMF capable telephone line. It allows the phone to access all crosspoints of the matrix, as well as dynamic party lines, IFB circuits, and other forms of communications. The 4RU high mountable TIF-4000 provides a transparent link to the telephone system enabling full dial-out capability from any designated keypanel with keypad. The TIF-4000 has full dial-in capability giving the caller a keypanel on the system via commands from the DTMF pad on their telephone. Since the TIF-4000 appears to the matrix as any other keypanel would, the only limitation on the number of units in the system is the same as for other keypanels.

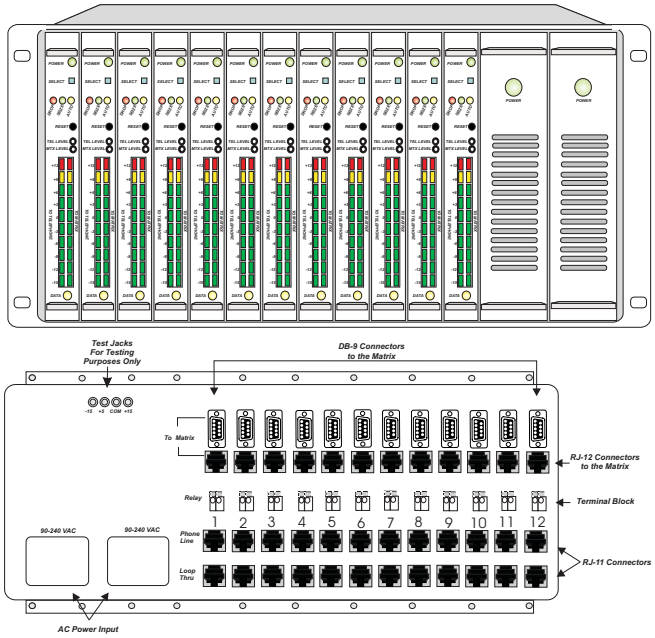


Figure 1. TIF-4000 front and TIF-4000 back. For a more detailed drawing, see page 14.

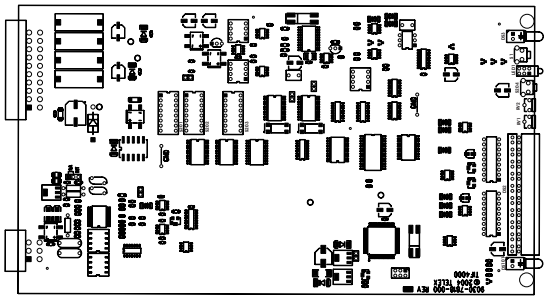


Figure 2. TIF-4000 Front Card. For more information on the front card, see page 14.

Installation

DIP Switch (201) Settings

The TIF-4000 front card DIP switch contains switches to configure the most often changed options. These include: *auto-answer on/off, ring signal on/off, password on/off, intercom port address, and full duplex mode*.

AUTO ANSWER (Switch 1)

Turning on the auto answer option will set the unit to answer the phone automatically when it rings. The number of rings required before it answers is determined by the setting of internal DIP switch (S202). If auto answer is turned OFF, the line will ring until someone at a keypanel answers the call or until the Select button on the TIF-4000's front card is pressed. To turn ON auto answer, place switch 1 in the down position. To turn OFF auto answer, place switch 1 in the up position.

GENERATE RING SIGNAL (Switch 2)

Turning on the generate ring signal option sets the unit so that when the phone line is ringing, keypanels that are configured to receive ring signals will produce an audible ring. To turn ON the ring signal, place switch 2 in the down position. To turn OFF the ring signal, place switch 2 in the up position.

PASSWORD REQUIRED (Switch 3)

Turning ON the password required option sets the unit so that when a call is automatically answered, the caller must enter a password via DTMF before the unit will allow communications. The password numeric sequence and length are determined by the settings of internal DIP switch (S203). To turn ON the password required option, place switch 3 (on S201) in the down position. To turn OFF the password required option, place switch 3 (on S201) in the up position.

INTERCOM PORT ADDRESS (Switches 4-7)

Switches 4 to 7 determine the address of the unit. The port address is expressed in binary with switch 4 being the least significant bit (LSB) and switch 7 being the most significant bit (MSB). To turn ON (set bit to 1) , place the desired switch in the down position. Turn OFF (set bit to 0), place the desired switch in the up position. ADAM, ADAM CS, and

***Table 1**- Correspondence between address numbers and intercom port numbers for ADAM, ADAM CS, and Zeus systems*

Address	Card Numbers (bold headings) and Port Numbers																								
Cards 1-25																									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
1	1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121	129	137	145	153	161	169	177	185	193
2	2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122	130	138	146	154	162	170	178	186	194
3	3	11	19	27	35	43	51	59	67	75	83	91	99	107	115	123	131	139	147	155	163	171	179	187	195
4	4	12	20	28	36	44	52	60	68	76	84	92	100	108	116	124	132	140	148	156	164	172	180	188	196
5	5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125	133	141	149	157	165	173	181	189	197
6	6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126	134	142	150	158	166	174	182	190	198
7	7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127	135	143	151	159	167	175	183	191	199
8	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200
Cards 26-50																									
	26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
1	201	209	217	225	233	241	249	257	265	273	281	289	297	305	313	321	329	337	345	353	361	369	377	385	393
2	202	210	218	226	234	242	250	258	266	274	282	290	298	306	314	322	330	338	346	354	362	370	378	386	394
3	203	211	219	227	235	243	251	259	267	275	283	291	299	307	315	323	331	339	347	355	363	371	379	387	395
4	204	212	220	228	236	244	252	260	268	276	284	292	300	308	316	324	332	340	348	356	364	372	380	388	396
5	205	213	221	229	237	245	253	261	269	277	285	293	301	309	317	325	333	341	349	357	365	373	381	389	397
6	206	214	222	230	238	246	254	262	270	278	286	294	302	310	318	326	334	342	350	358	366	374	382	390	398
7	207	215	223	231	239	247	255	263	271	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399
8	208	216	224	232	240	248	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392	400
Cards 51-75																									
	51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
1	401	409	417	425	433	441	449	457	465	473	481	489	497	505	513	521	529	537	545	553	561	569	577	585	593
2	402	410	418	426	434	442	450	458	466	474	482	490	498	506	514	522	530	538	546	554	562	570	578	586	594
3	403	411	419	427	435	443	451	459	467	475	483	491	499	507	515	523	531	539	547	555	563	571	579	587	595
4	404	412	420	428	436	444	452	460	468	476	484	492	500	508	516	524	532	540	548	556	564	572	580	588	596
5	405	413	421	429	437	445	453	461	469	477	485	493	501	509	517	525	533	541	549	557	565	573	581	589	597
6	406	414	422	430	438	446	454	462	470	478	486	494	502	510	518	526	534	542	550	558	566	574	582	590	598
7	407	415	423	431	439	447	455	463	471	479	487	495	503	511	519	527	535	543	551	559	567	575	583	591	599
8	408	416	424	432	440	448	456	464	472	480	488	496	504	512	520	528	536	544	552	560	568	576	584	592	600
Cards 76-100																									
	76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
1	601	609	617	625	633	641	649	657	665	673	681	689	697	705	713	721	729	737	745	753	761	769	777	785	793
2	602	610	618	626	634	642	650	658	666	674	682	690	698	706	714	722	730	738	746	754	762	770	778	786	794
3	603	611	619	627	635	643	651	659	667	675	683	691	699	707	715	723	731	739	747	755	763	771	779	787	795
4	604	612	620	628	636	644	652	660	668	676	684	692	700	708	716	724	732	740	748	756	764	772	780	788	796
5	605	613	621	629	637	645	653	661	669	677	685	693	701	709	717	725	733	741	749	757	765	773	781	789	797
6	606	614	622	630	638	646	654	662	670	678	686	694	702	710	718	726	734	742	750	758	766	774	782	790	798
7	607	615	623	631	639	647	655	663	671	679	687	695	703	711	719	727	735	743	751	759	767	775	783	791	799
8	608	616	624	632	640	648	656	664	672	680	688	696	704	712	720	728	736	744	752	760	768	776	784	792	800

***Table 2**- Address DIP Switch Settings*

Logical Keypanel Number	Dip Switch Settings			
	SW 4	SW5	SW6	SW7
1	Closed	Open	Open	Open
2	Open	Closed	Open	Open
3	Closed	Closed	Open	Open
4	Open	Open	Closed	Open
5	Closed	Open	Closed	Open
6	Open	Closed	Closed	Open
7	Closed	Closed	Closed	Open
8	Open	Open	Open	Closed
9	Closed	Open	Open	Closed
10	Open	Closed	Open	Closed
NOTE: Shaded area is for CS9xxx system addresses only!				

Zeus units use a 1-8 address scheme for their ports (e.g. ports 1-8 have address 1-8, ports 9-16 have addresses 1-8, etc...). CS9xxx systems use a 1-10 scheme for port address (e.g. ports 1-10 have address 1-10. ports 11-20 have addresses 1-10, etc...).

> **NOTE**: You must set the card address before you put the card into the Frame.

To set the address for ADAM, ADAM CS, or Zeus systems, do the following:

1. Determine the port number that will be used for the TIF-4000.
2. Locate the port number and its corresponding address in Table 1.
3. Determine the DIP switch settings by looking up the address determined in the previous step in Table 2.
4. Set the DIP switches on the back of the unit.

To set the address for CS 9xxx systems, do the following:

1. Determine the intercom port (audio channel number) that will be used for the TIF-4000.
2. For port numbers ending in 1 through 9, the address is the last digit of the port number. If the last digit is zero, use 10 as the address number.
3. Determine the DIP switch settings by looking up the address in Table 2.
4. Set the DIP switches on the back of the unit.

FULL DUPLEX METHOD SWITCH 8 (S201)
Switch 8 (S201) controls the method by which full duplex operation is implemented in the unit. This switch only works if full duplex mode is set via internal DIP switch (S202), switch 7 (factory default setting for Switch 7 is OFF, full duplex mode). If switch 8 is in the open position, then the unit will be forced into full duplex mode all the time. If switch 8 (S201) is in the closed position, then the unit will be forced into full duplex mode only when audio is present.

When using full duplex mode, users may hear an increased amount of echo on the line. This may be more pronounced when the TIF-4000 is forced into full duplex mode all of the time (switch 8 open) rather only when audio is present (switch 8 closed).

Internal DIP Switch (S202)
Internal DIP switch (see Figure 3) is accessed by removing the card from the frame

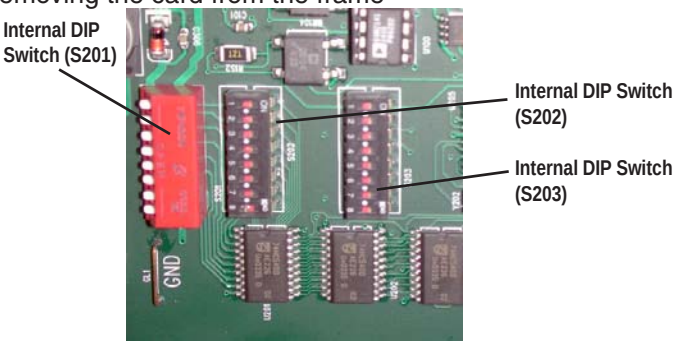


***Figure 3 -** TIF 4000 Internal DIP Switch Locations*

***Table 3**- Ring Count Settings*

# of Rings	SW1	SW2
1	OFF	OFF
2	ON	OFF
4	OFF	ON
8	ON	ON

RING COUNT
Switches 1 and 2 determine the number of rings before the unit auto answers. The ring count is approximate. The switches have no effect unless switch 1 on the rear panel DIP switch bank is in the down position. To set the ring count, see Table 3.

DTMF OR PULSE DIAL SELECTION
Switch 3 sets the dialing mode to either Dual Tone Multi-Frequency (DTMF, also known as touch tone) or Pulse. When the switch is in the OFF position, DTMF dialing is selected. When the switch is in the ON position, Pulse dialing is selected.

POINT-TO-POINT SEIZE
Switch 4 turns ON and OFF the Point-to-Point Seize feature. When the switch is in the OFF position, the normal line seize operation (via the keypanel) is selected. When the switch is in the ON position a line will be seized immediately upon the designated TIF-4000's talk key being pressed via the keypanel.

ONE TOUCH DIAL
Switch 5 enables/disables the One Touch Dialing feature. When the switch is in the OFF position, One Touch Dial is disabled. When the switch is in the ON position, One Touch Dial is enabled.

One Touch Dial works as follows:
If a number is stored in Auto Dial memory 1 on the TIF-4000, and the line is on-hook, then the TIF-4000 will autodial the number stored in Auto Dial memory 1 whenever any keypanel closes a point-to-point talk key to the TIF-4000.

FAST SEIZE
Switch 6 enables/disables the Fast Seize feature. If the switch is in the OFF position, Fast Seize is disabled. If the switch is in the ON position, Fast Seize is enabled. If Fast Seize is enabled and the unit is set to auto answer, then the TIF-4000 will answer or "seize" the line at the start of the first ring. *It is important to note that a ring will not be heard on any of the keypanels*.

DSP FULL OR HALF DUPLEX SELECTION
Switch 7 determines either full duplex or half duplex operation. If the switch is set to the OFF position, the DSP is forced into full duplex mode as determined by the setting of switch 8 on the DIP switch bank located on the rear panel of the TIF-4000. See **Full Duplex Method** for more information. If the switch is set to the ON position, the DSP is never forced into full duplex.

AUDIO DUCKING
Switch 8 enables/disables the Audio Ducking feature. If the switch is set to the ON position, Audio Ducking is disabled. If the switch is set to the OFF position, Audio Ducking is enabled. The Audio Ducking feature helps eliminate feedback between the intercom system and the telephone line.

Internal DIP Switch (S203)
Internal DIP switch (S203) select the password. It has no effect unless password required has been enabled on the DIP switch located on the rear panel. When password required is enabled, the password must be entered via DTMF by the caller before they may communicate. This is to prevent unauthorized use of the intercom by callers. (See Table 5.)

Switches 7 and 8 select the length of the password, from 1 digit to 4 digits. If set for 1 digit only, the first digit of the password used , if set for 2 digits, then the first 2 digits are used, etc. See Table 4.

Table 4 *- Password length DIP Switch Settings*

PW Length	SW7	SW8
4	OFF	OFF
3	ON	OFF
2	OFF	ON
1	ON	ON

Connections

INTERCOM
Use either of the "To Matrix" connectors (but not both) to connect to an intercom port. The intercom port that you connect to will determine the address of the unit (see Setting Address). Cable wiring diagrams are shown in Figure 6 and 7. An LED labeled "Data" is located on the front card and serves as a basic indicator of data being present.

TELEPHONE AND TELEPHONE LINE
There are two telephone connections provided on the rear of the TIF-4000. Plug the telephone line into the jack labeled "Phone Line". You may also plug a standard telephone into the jack labeled "Loop Thru".

NOTE: The standard telephone plugged into the "Loop Thru" jack is disconnected when the TIF-4000 seizes the telephone line.

Relay
Simply put, a relay is a switch that is OPEN or CLOSED. In the case of the TIF-4000, when it is off-hook (a call is active), the switch is closed and an indicator, such as an external lamp, can be activated.

Table 5 *- Password length DIP Switch Settings*

Password	SW1	SW2	SW3	SW4	SW5	SW6
4,7,8,8	OFF	OFF	OFF	OFF	OFF	OFF
7,7,7,7	ON	OFF	OFF	OFF	OFF	OFF
4,6,8,7	OFF	ON	OFF	OFF	OFF	OFF
1,0,5,8	ON	ON	OFF	OFF	OFF	OFF
1,4,8,4	OFF	OFF	ON	OFF	OFF	OFF
7,0,3,3	ON	OFF	ON	OFF	OFF	OFF
5,9,0,7	OFF	ON	ON	OFF	OFF	OFF
0,9,3,5	ON	ON	ON	OFF	OFF	OFF
3,7,8,0	OFF	OFF	OFF	ON	OFF	OFF
1,4,5,0	ON	OFF	OFF	ON	OFF	OFF
6,9,2,7	OFF	ON	OFF	ON	OFF	OFF
8,3,0,3	ON	ON	OFF	ON	OFF	OFF
8,3,3,6	OFF	OFF	ON	ON	OFF	OFF
6,0,8,0	ON	OFF	ON	ON	OFF	OFF
2,9,5,7	OFF	ON	ON	ON	OFF	OFF
5,8,5,1	ON	ON	ON	ON	OFF	OFF
9,5,9,9	OFF	OFF	OFF	OFF	ON	OFF
8,2,0,6	ON	OFF	OFF	OFF	ON	OFF
4,7,4,0	OFF	ON	OFF	OFF	ON	OFF
4,5,7,3	ON	ON	OFF	OFF	ON	OFF
8,8,3,0	OFF	OFF	ON	OFF	ON	OFF
0,6,2,0	ON	OFF	ON	OFF	ON	OFF
3,3,3,9	OFF	ON	ON	OFF	ON	OFF
9,8,5,0	ON	ON	ON	OFF	ON	OFF
7,3,5,6	OFF	OFF	OFF	ON	ON	OFF
9,1,4,6	ON	OFF	OFF	ON	ON	OFF
9,9,9,1	OFF	ON	OFF	ON	ON	OFF
3,8,8,1	ON	ON	OFF	ON	ON	OFF
4,2,4,0	OFF	OFF	ON	ON	ON	OFF
1,0,6,3	ON	OFF	ON	ON	ON	OFF
8,6,3,2	OFF	ON	ON	ON	ON	OFF
4,2,3,4	ON	ON	ON	ON	ON	OFF
0,8,5,1	OFF	OFF	OFF	OFF	OFF	ON
0,6,7,4	ON	OFF	OFF	OFF	OFF	ON
0,0,1,5	OFF	ON	OFF	OFF	OFF	ON
6,2,9,4	ON	ON	OFF	OFF	OFF	ON
9,9,5,4	OFF	OFF	ON	OFF	OFF	ON
1,0,7,9	ON	OFF	ON	OFF	OFF	ON
9,0,3,0	OFF	ON	ON	OFF	OFF	ON
0,1,6,6	ON	ON	ON	OFF	OFF	ON
9,5,5,6	OFF	OFF	OFF	ON	OFF	ON
8,0,5,4	ON	OFF	OFF	ON	OFF	ON
6,2,9,3	OFF	ON	OFF	ON	OFF	ON
6,6,1,1	ON	ON	OFF	ON	OFF	ON
6,3,6,7	OFF	OFF	ON	ON	OFF	ON
1,5,2,9	ON	OFF	ON	ON	OFF	ON
2,7,5,6	OFF	ON	ON	ON	OFF	ON
8,3,1,3	ON	ON	ON	ON	OFF	ON
1,6,5,6	OFF	OFF	OFF	OFF	ON	ON
7,6,4,2	ON	OFF	OFF	OFF	ON	ON
1,6,5,3	OFF	ON	OFF	OFF	ON	ON
1,6,0,3	ON	ON	OFF	OFF	ON	ON
4,3,7,3	OFF	OFF	ON	OFF	ON	ON
3,5,7,4	ON	OFF	ON	OFF	ON	ON
4,7,6,4	OFF	ON	ON	OFF	ON	ON
3,8,6,8	ON	ON	ON	OFF	ON	ON
5,7,1,9	OFF	OFF	OFF	ON	ON	ON
3,9,2,7	ON	OFF	OFF	ON	ON	ON
6,8,5,7	OFF	ON	OFF	ON	ON	ON
5,4,8,7	ON	ON	OFF	ON	ON	ON
3,2,5,2	OFF	OFF	ON	ON	ON	ON
0,4,0,1	ON	OFF	ON	ON	ON	ON
6,4,0,9	OFF	ON	ON	ON	ON	ON
4,3,4,3	ON	ON	ON	ON	ON	ON

Setting Audio Levels

Audio levels to the intercom matrix and to the telephone line can be adjust via the trim pots located on the front card.

SETTING AUDIO LEVELS TO INTERCOM MATRIX
Adjustments may be made via the front card pots (see Figure 1). To adjust the pot use a small flat blade, screw driver, or trimpot adjustment tool. Initially set the front card level control for mid-range. Have the caller talk at their normal level and adjust the control for the best audio quality while avoiding going into the red section of the audio meter (to Matrix) located on the front panel.

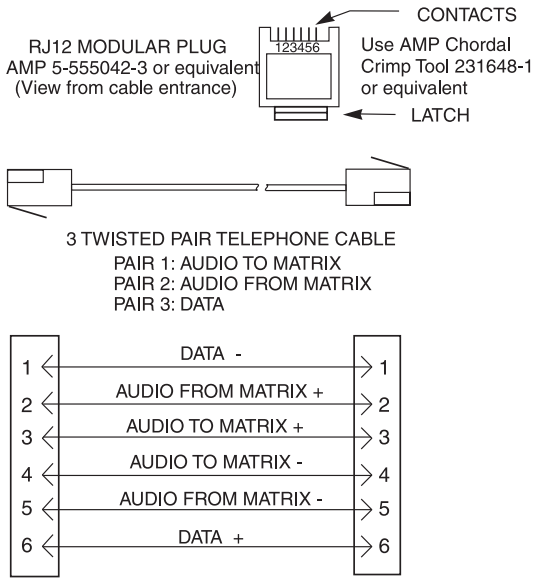
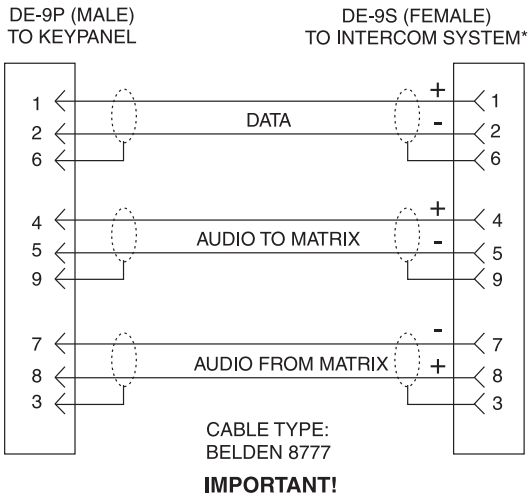


Figure 6 *- RJ12 Intercom Cable*



IMPORTANT!

* When connecting to an ADAM CS back panel, use only low-profile cable connectors such as AMP Part No. 747516-3 (Telex Part No. 59926-678)

Figure 7 *- DE9 Intercom Cable*

SETTING AUDIO LEVELS TO TELEPHONE LINE
Adjustment may be made via the front card control (see Figure 1). To adjust the control use a small flat blade screwdriver or trimpot adjustment tool. Initially set the front card level control for mid-range. Have the caller talk at their normal level and adjust the control for the best audio quality, while avoiding going into the red section of the audio meter (to Telephone) located on the front card.

Configuring for Country's Telephone System
The TIF-4000 should be configured to work with the telephone system to which it is connected. Each country or area of the world has unique signaling differences that could cause erratic operation of the TIF-4000 if it is not properly configured. If the system you intend to connect to is not properly configured. If the system you intend to connect to is not currently supported, you may request a configuration using the form located in the back of this manual.

To configure the unit for use with a specific country's telephone system do the following:

NOTE: AZedit must be configured to allow firmware downloads.

1 Connect the TIF-4000 to the intercom system.
2 Run the AZedit software and go to the keypanel software versions screen. This is located under the Status Menu (Status> Software Versions> Keypanels).
3 Click on the **entry** for the TIF-4000 you wish to configure.
4 The configurations are in a self-extracting archives on the included disk. Extract and copy these files to a known location on the computer connected to the intercom matrix.
5 Press **CTRL+SHIFT+D** to start the software download process. A download screen appears.
6 Select the **location** you copied the files to in step 4 and select the file corresponding to the country needed.
7 Click **OK**.

Once the software versions window reappears, the process is complete.

The status reported for the TIF-4000 contains a number corresponding to the country configuration. This is reported as LOCALE=XX where XX is a specific number for each country. The current possible configurations are:

LOCALE #	**Country or Countries**
0	North America, Korea, Taiwan
1	Belgium
2	France
3	Germany
4	United Kingdom(UK)
5	Italy
6	Japan
7	Netherlands
8	Norway
9	Not Used
10	Singapore
11	Brazil, Sweden
12	Ireland
CUST	Custom Configuration

Operation

Operation From A Keypanel
The TIF-4000 is operated from the intercom keypanels, and from the dial pad on the telephone at the remote end of the line. Any keypanel with a keypad may use a TIF-4000. All that is necessary is to program a key to talk to the TIF-4000, as if it were a keypanel. The alpha numeric display or tally LED for that key then provides information about the phone line. A solid display or non-illuminated LED indicates a line which is not in use. A slow flash indicates a line which is in use (off hook). A rapidly flashing display or LED indicates a line which is ringing. In addition, the alpha numeric display will display digits as they are dialed, and the LED will flash for each digit.

NOTE: Displayed tallies will be different if the "Don't generate tallies for TIF or trunk use" option has been selected in **Options> Intercom Configuration**.

PROGRAMMING A KEY TO USE THE TIF-4000
To use the TIF-4000, either to answer a call, or to call out, you first need to program a key to talk to the TIF-4000. This is accomplished in the same manner as programming a key to talk to a keypanel. To program a key by port number, enter NUM-nnn-PGM-t, where NUM is the number 1 key, nnn is the port number of the TIF-4000 you want to use, and t is any talk key. You will also need to use the listen key, so it should be assigned as either AF (auto-follow), or AL (auto-listen).

NOTE: The TIF-4000 only responds to commands which are sent via a point-to-point key assignment. If you wish to use the TIF-4000 primarily on a PL, you must add a point-to-point assignment as the L2 talk assignment on the talk key for any panels which are going to either answer the line, or dial out on the line.

DIALING A CALL

NOTE: The KP-32 can use either of these methods to dial using a TIF-4000.

To dial a call on the TIF-4000 using a KP-96 or KP-32, do the following:

1 Turn on the listen key for the line you wish to dial on. This will allow you to hear dial tone, and your DTMF dialing tones.
2 Enter dial mode by entering PHONE-PGM-T. PHONE is the 4 button on the keypad. PGM is on the keypad, and T is the talk key which is programmed to talk to the TIF-4000 you are dialing on. Leave the talk key in the latched position as you dial the number.
3 Dial the number. As you enter each digit, it will appear in the alpha display above the key you are dialing on. If the listen key is latched, you will hear each DTMF tone as it is generated.
4 When you have completed dialing, momentarily turn off the talk key to exit dial mode. The alpha numeric display will revert to normal, and you may use the key and keypad in the normal manner.

NOTE: Digits 0-9 generate the DTMF digits 0-9. PGM generates the #, and CLR generates *(#and * are displayed for these keys).

It is necessary to press CLR twice if you wish to generate an *, as a single CLR is used to trigger the speed dial and redial features.

To dial a call on the TIF-4000 using a KP-12, KP-812 or KP-32, do the following:

1 Tap the phone key to begin your call. This will place the keypanel in dial mode: the CALL indicator will turn on, and the MAN DIAL (manual dial) will display in the call waiting window. You should also hear the dial tone.

NOTE: You can hang up the phone line at this time by simply tapping the phone key again.

2 Click SELECT to select MAN DIAL The twelve intercom keys can now be used to dial a telephone number. Each key corresponds to the number printed next to it on the front of the panel. If the keypanel has alphanumeric displays, the key numbers are displayed above each key.
3 Begin dialing the number by tapping the appropriate keys. After you dial the first digit, END DIAL will appear in the call waiting window. When you have completed the dialing, click SELECT to select END DIAL. This will return the keypanel to normal operating mode. If the called party answers, proceed with you conversation.

HANGING UP

The TIF-4000 will detect the call at the far end has hung up under most circumstances. It detects the hang up by either loop interrupt, battery reversal, or the presence of a dial tone or a busy signal. Some telephone systems do not provide any of the above, so it will be necessary to force a hang up. In addition, if the call was placed to an auto answer device, it will be necessary to force a hang up when the call is complete.

Enter PHONE-CLR-t, where PHONE is the 4 on the keypad, CLR is the CLR button, and t is the talk key which is programmed to talk to the TIF-4000 which you want to hang up. This will disconnect the line for which you struck the talk key.

NOTE: If talk is in the ON position, you must turn off the key, then momentarily turn it on again to indicate which line you wish to disconnect. If the line is in dialing mode, then you must first exit dialing mode by turning off the key, then use PHON-CLR-t to hang up.

Re-dialing the Last Number
The TIF-4000 remembers the last number which it has dialed.

1 Enter dialing mode by following instructions for dialing a call.
2 Enter **CLR-0-0**. The TIF-4000 will automatically redial the last number it dialed.
3 Momentarily release the talk key to exit dialing mode.

For example, If you have a call to 818.566.6700 and you are disconnected, issuing the redial command will reestablish the call. The redial command may be issued from any keypanel in the intercom, not just the keypanel that originally dialed the call.

DIALING A SPEED DIAL NUMBER
The TIF-4000 has 24 internal memories for storing frequently used phone numbers. To dial one of these numbers, do the following:

1 Enter **Dial** mode.
2 Enter **CLR-nn**, where CLR is the clear button on the keypad, and nn is two digits, which are the speed dial code.
3 Momentarily release the talk key to exit the dialing mode.

STORING A SPEED DIAL NUMBER

1 After dialing the number the usual way, but before exiting dial mode, enter the **CLR-PGM-nn** before you release the talk key to exit dialing mode.
2 Momentarily release the talk key to exit dialing mode.

NOTE: To generate a pause during auto dial, enter ***99**. This is used, for example, if you need to enter a digit to get an outside line, and your phone system requires a pause before continuing to dial.

Each number may contain up to 25 digits.

A TIF-4000 can have different numbers stored in it. Unlike the TIF-951, the TIF-4000 stores the numbers in non-volatile memory and therefore does not require a UPS to maintain stored speed dial numbers.

ANSWERING A CALL

1 When a line is ringing, the alpha-numeric display or LED above the talk key which is programmed for that line will flash rapidly.
2 To answer the call, first turn the listen key ON, then press the talk key and speak into the microphone or headset.
3 If you have been programmed as a default station, your panel will “ring” whenever one of the lines rings. If you do not have a key already programmed, the ringing line will appear on your incoming call key (the key farthest to the right on the main panel, also known as the Call Waiting Window or CWW). To answer, press the incoming call key and answer. You should copy the key to a main key position, either just before or just after you answer, so you can turn on the listen key to hear the caller audio.

TIF-4000 System Setup to Receive Calls

To the intercom system, the TIF-4000 is similar to a keypanel. If the phone lines are to be used for outgoing calls only, then no programming in AZedit is necessary. If users are going to phone into the intercom system from the outside, then the TIF-4000 needs to be configured to allow them to use the phone line in much the same way a local user uses the keypanel.

Programming information for the phone line is entered into AZedit just as if the TIF-4000 were an ordinary keypanel, by selecting “Keys” from the main menu, then selecting the TIF-4000 from the pick list of keypanels. The TIF-4000 operates much the same way as a keypanel, except the “keys” are really the DTMF buttons on the user’s telephones.

AUTO ANSWER MODE
To use the TIF-4000 in auto answer mode, you must first enable auto answer mode on the front card DIP switch bank, switch 1. You may also wish to enable Password Required, switch 3. In addition, you may select the number of rings before the unit answers (internal DIP switch bank #2), and the actual password (internal DIP switch bank #3).

When the caller dials into the TIF-4000, they will hear the line ring, then the unit will answer and beep to request the password (if password required is enabled). The user must enter the password. The unit will beep once to confirm a proper password. If the password is not correct, the unit will beep twice to allow another try. The user is allowed 3 attempts to enter the correct password, after which the TIF-4000 will disconnect.

Once the password has been entered, the TIF-4000 will establish communications on key #1 automatically. From AZedit, this will be talk and listen key #1. If for example, the user is a camera operator, it may be desirable to program the camera PL as talk and listen on talk and listen keys #1. If the caller were a reporter,

You might program an IFB on listen key #1, but no talk key #1.

Keys 2 to 7 may also be programmed. To use the other keys from the phone, just press the DTMF button for the key you wish to use. For example, if key #1 was the camera PL, and you have finished with the shot, you may press #1, which will toggle off key 1. If master control were programmed on key #2, you may then press 2 and call master control. Likewise, you might have an IFB programmed on listen 3, with no talk. If you press 3, you will hear the IFB. #4 could have an IFB talk on it, to allow a caller to speak on an IFB circuit.

Each DTMF button acts as if it were a push ON/ push OFF switch. When programming in AZedit, program the same key number as the number the user is going to press on the telephone to speak.

Talk keys 8 to 15 have a special purpose. If you are not using auto answer mode, but have set up the TIF-4000 to be manually answered, talk keys 8 to 15 will be programmed for the keypanels which are to receive the ring signal. They may also be toggled ON and OFF from the phone by DTMF 8, so they may be used in auto answer mode as well. You may program only key 8, in which case it will behave the same as keys 1-7. You may also program additional keypanels, PLs, IFBs, etc. on keys 9-15, and they will be activated simultaneously by the 8 button on the phone.

MANUAL ANSWER MODE

In **manual answer mode**, the line will ring until it is answered from a keypanel. In general, you must designate panels which are to receive the ring, so they can answer the line. When a line is manually answered, the caller does not have to enter a password, even if the password required switch is turned ON. You may mix modes by enabling auto answer, but setting the ring count for 8 rings. If no user has answered the call by 8 rings, the TIF-4000 will then automatically answer the call, and if the password required is enabled, the call will be screened by requiring a password.

To use manual answer mode, you may choose to program keys 1 to 7 as above if you wish. When the phone is manually answered, key 1 will not be automatically activated, but the caller may activate any of the keys if he wishes.

You must also designate the panels which are going to ring when the line rings. Program these panels on keys 8 to 15, using both L1 and L2 if you have more than 8. It is generally not necessary to program the listen keys on these positions. When the line rings, the TIF-4000 will "call" these panels when the line is ringing. The TIF-4000 generates a ringer noise which is then transmitted to these panels. The panels will display the TIF-4000's alpha numeric in the incoming call window (CWW), and if a talk key has already been programmed on the panel, its alpha numeric will flash rapidly.

Using the TIF-4000 From the Telephone

The TIF-4000 will behave differently depending on how it is programmed. It is up to the operator who programs the TIF-4000 to convey to the user what to expect. If the user is not familiar with the operation of the TIF-4000, it is best to keep the operation as simple as possible. For this reason, it is suggested that you not use password required unless you have had problems with nuisance calls in the past. If the TIF-4000 field user only requires one service, it is best to program that service on key 1, enable auto answer, and disable password requires. The telephone user will then only have to dial the proper phone number to use the interface. As they become more familiar with its operation, you can then begin to offer more options to the users, or begin to require a password.

When calling in, if the unit is in auto answer mode, it will answer the call after the number of rings which have selected. If password required is not enabled, the unit will indicate it is ready with a single beep. If password required is enabled, the TIF-4000 will prompt for a password with 2 beeps. The user will enter the password, and the unit will either beep once if the password was correct, or twice if is wrong. The user is allowed 3 attempts to enter the password, after which the TIF-4000 will disconnect. In the event a user calls the TIF-4000 when the intercom system is either turned OFF or absent, the TIF-4000 will answer and prompt with 3 beeps.

Once the password is entered, the TIF-4000 will enable talk and listen on key 1. This should be programmed ahead of time to whatever communications the caller generally needs first. If it is not desirable for the caller to be able to talk at this point, then only the listen key for key 1 should be programmed.

The caller may then either continue to use key 1 or select other keys with their DTMF pad. They may turn off key 1 by pressing DTMF 1, or may continue to add other keys. At any time, the caller may turn off all keys without hanging up by pressing 0. When the call is complete, the caller should enter*#, which will cause the TIF-4000 to disconnect. This is more reliable than waiting for the phone system to pass the disconnect information to the TIF-4000.

DTMF CODES

Once programmed, the TIF-4000 may be operated via the DTMF keypad on the telephone. The DTMF keys have the following functions:

Normal Mode:

1 thru 7 Toggle ON and OFF talk and listen #1 to #7.

NOTE: Initially, #1 will be enabled if the unit auto answered the line.

8 Toggle ON and OFF talk and listen to the panels which ring when the line is ringing. This allows the caller to "recall" the panels without having to hang up and redial. Toggling this ON will allow the callers voice to be heard from all the panels which normally ring.

9 Enters programming mode, to reassign keys.

0 Turn OFF all talk and listen keys. Since 1-8 are toggles, it is possible to forget which keys are ON and which are OFF. In this case, just press 0 to turn them all OFF, and start over.

*1 thru *7 Toggle ON and OFF listen 1-7. By pressing * before the key, you only effect the listen. This allows you to listen to a circuit without talking to it, or to talk to a circuit without listening to it.

NOTE: You will automatically listen and talk to #1 if the TIF-4000 auto answered the line.

*8 Toggle ON and OFF listen for 8-15.

*# Disconnect. This will cause the TIF-4000 to hang up. It is a good idea to do this before you hang up, as many phone systems take a long time to signal that the far end has hung up.

Programming Mode:

You may reprogram the talk and listen assignments on 1-7, just as you can on a keypanel (if they are not restricted via AZedit). Note, the sequences are the same as the sequence you would use from a keypanel, except that you must first enter programming mode by pressing 9.

NOTE: The use of programming mode is discouraged due to a lack of feedback to the user to verify a programming sequence.

1 nnn # K	Program a talk key to a point-to-point.
2 nn #K	Program a talk key to a PL.
01 nn # K	Program a talk key to a special list.
02 nn # K	Program a talk key to an IFB.
03 nn # K	Program a talk ISO.
04 nn # K	Program a talk key relay.
3 5 # K	Program a talk key to all call (turn on the lower numbered talk keys).
1 nnn # *K	Program a listen key to point-to-point.
2 nn # *K	Program a listen key to PL.
3 2 # *K	Program a listen key to auto follow.
3 3 # *K	Program a listen key to auto mute.
01 nn # *K	Program a listen key to a special list.
02 nn # *K	Program a listen key to an IFB.
03 nn # *K	Program a listen ISO.
04 nn # *K	Program a listen key to a relay.
*9	Exit programming mode.
*0	Exit programming mode and turn OFF all talk and listen.
*#	Disconnect.

NOTES

1. 0-9 are the number keys, * and # are the star and pound keys.
2. nnn is three digit for the panel number
3. nn is two digit for an IFB, PL, Relay, Special List, or ISO.
4. K is a key which you are programming, just press the digit (1-7). This is used to represent the listen key.

Specifications

Matrix Input/Output:
0dBu to +20 dBu

Telephone Input/Output
-30dBu to +6dBu

Noise (200Hz to 3.8 kHz):
-40dBu or less

Harmonic Distortion (300Hz to 3.8kHz):
Intercom Side: -30 dBu or less
Telephone Side: -25dBu or less

Frequency Response:
300Hz to 3.8kHz +0dB, -6dB

Matrix Connectors:
DE-9S Female
RJ12 Female

Telephone Line Connector:
RJ11 Female

Telephone Loop-Thru Connector:
RJ11 Female

Power Requirements
Universal Power Supply: 100-240 VAC, 50/60Hz,
Card: Every card uses 1Amp of power

Power Dissipation
TIF-4000 Full Frame (12 TIF Cards)
750mA @ -15V
1A @ +15V
9A @ +5V

TIF-4000 Individual Card
60mA @ -15V
70mA @ +15V
750mA @ +5V

Environmental:
Operating Temperature:
-4°F to 122° F(-20°C to 50°C)
Storage Temperature:
-22°F to 158°F (-30°C to 70°C)

Dimensions
19" W x 6.97" H x 12.8" D
(25.4mm W x 177.038mm H x 325.12mm D
Weight
28.45 lbs (12.9047 kg)
Specifications subject to change without notice.

Regulatory Compliance
FCC Part 68
EN 55022 / FCC15B

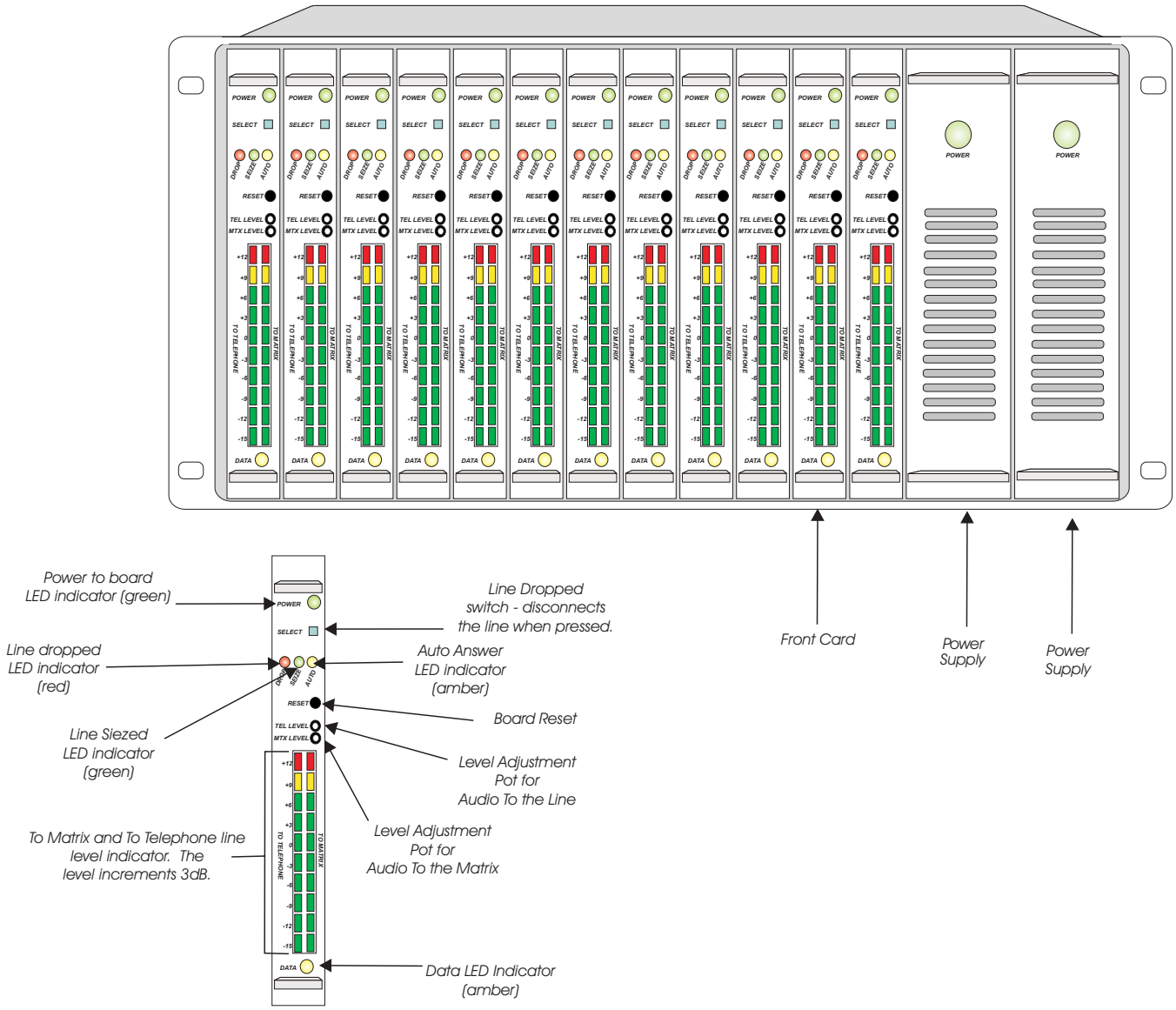


Figure 8. Front of TIF-4000 frame reference view.

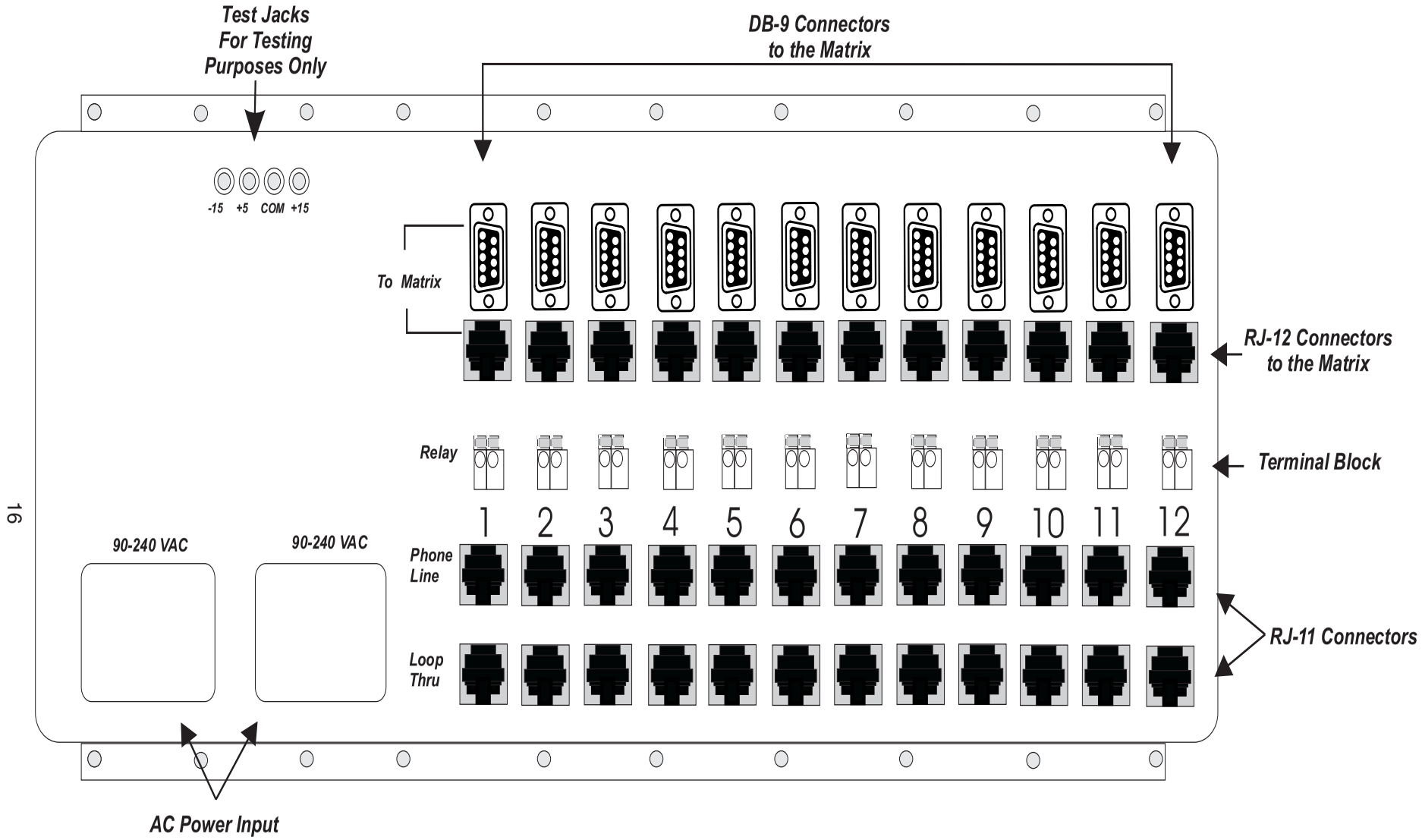


Figure 9. TIF-4000 backcard frame reference view.

TELEPHONE INTERFACE REQUIREMENTS FORM
October 2004

The Telex TIF 4000 Digital Hybrid Telephone Line Interface has been designed to respond to ringing for auto-answer and to respond to a number of conditions to detect hang-up. These conditions are (in the standard product) based upon the telephone systems of the US and other select countries. PBX (private branch exchange) systems in the US and other countries may have ringing and hang-up characteristics which differ from the design parameters used in the TIF 4000. Public telephone systems in countries other than those currently supported by Telex may have ringing and hang-up characteristics which differ from the design parameters used in the TIF 4000. Additionally, some countries require governmental approval for connection of the TIF 4000 to the public telephone system. Telex handles these requirements on a case by case basis and may require a onetime engineering fee to adapt the TIF 4000 for a specific telephone system or to obtain governmental approval. Additionally, Telex may require the customer to initiate the government approval process of the TIF 4000 for their particular telephone system.

Here is a form which can be used to obtain the required specific technical information.

Termination impedance matching (off-hook):_____

Termination impedance matching (on-hook):_____

Protection devices required:_____

Return loss:_____dBm

Maximum allowable transmit level:_____dBm

Hi-pot tests: Tip to ring:_____
Tip to ground:_____
Ring to ground:_____

Ring Signal: frequency:_____Hz cadence:_____sec. on _____sec. off

Disconnect Signal: loop drop: Y____ N____
loop reversal: Y____ N____
audio signal: Y____ N____
If Y, frequency of tone(s):_____
cadence:_____sec. on _____sec. off

DTMF dialing: frequencies:_____
duration:_____msec. interdigit pause:_____msec.

Pulse dialing: pulse rate:_____Hz break-to-make ratio_____:_____

Hook flash break duration:_____msec. min. _____msec. max.