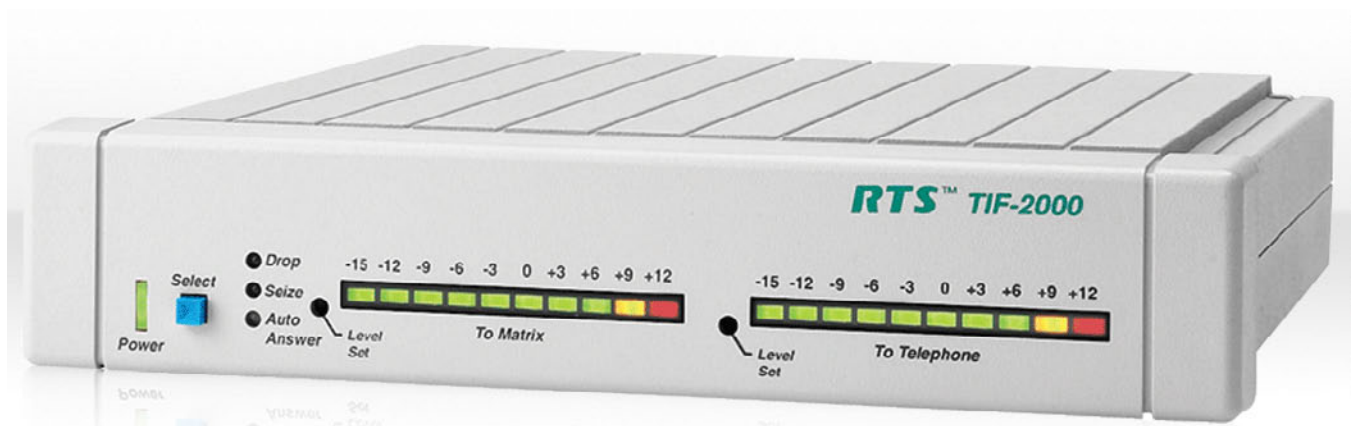


Model TIF 2000
Digital Hybrid Telephone Line Interface

User Manual



PROPRIETARY NOTICE

The product information and design disclosed herein were originated by and are the property of Bosch Security Systems, Inc. Bosch reserves all patent, proprietary design, manufacturing, reproduction, use and sales rights thereto, and to any article disclosed therein, except to the extent rights are expressly granted to others.

COPYRIGHT NOTICE

Copyright 2009 by Bosch Security Systems, Inc. All rights reserved. Reproduction, in whole or in part, without prior written permission from Bosch is prohibited.

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

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

Table of Contents

INTRODUCTION	3
Description	3
INSTALLATION	5
Unpacking	5
Rear Panel DIP Switch (S201)	5
AUTO-ANSWER	5
GENERATE RING SIGNAL	6
PASSWORD REQUIRED	6
INTERCOM PORT ADDRESS	6
FULL-DUPLEX MODE	8
Internal DIP Switch (S202)	9
RING COUNT	10
DTMF OR PULSE DIAL SELECTION	10
POINT-TO-POINT SEIZE	10
1-TOUCH DIAL	10
1-Touch Dial Operation	10
FAST SEIZE	10
DSP FULL OR HALF-DUPLEX SELECTION	11
AUDIO DUCKING	11
Internal DIP Switch (S203)	11
Rack Mounting	13
Connections	13
INTERCOM	13
TELEPHONE AND TELEPHONE LINE	13
POWER SUPPLY	14
Setting Audio Levels	15
SETTING AUDIO LEVELS TO THE INTERCOM MATRIX	15
SETTING AUDIO LEVELS TO THE TELEPHONE LINE	15
Configuring for a Country's Telephone System	16
OPERATION	17
Operation From a Keypanel	17
PROGRAMMING A KEY TO USE THE TIF 2000	17
DIALING A CALL	17
HANGING UP	18
REDIALING THE LAST NUMBER	18
DIALING A SPEED DIAL NUMBER	19
STORING A SPEED DIAL NUMBER	19
ANSWERING A CALL	19
TIF 2000 System Set Up to Receive Calls	19
AUTO-ANSWER MODE	20
MANUAL ANSWER MODE	20
Using the TIF 2000 From the Telephone	20

DTMF CODES21

 Normal Mode21

 Programming Mode22

Specifications23

TELEPHONE INTERFACE REQUIREMENTS FORM

OCTOBER 200824

Introduction

This manual describes the installation, programming and operating procedures for the RTS Model TIF 2000 Digital Hybrid Telephone Line Interface. Since TIF 2000 functions as a keypanel, the user may also need to refer to the manuals and/or online 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 2000 is a single line digital hybrid telephone line interface designed to be compatible with ADAM, ADAM CS, Zeus, Zeus III, Cronus and CS 9000 series 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 1RU high by ½ wide rack mountable (via an optional kit) TIF 2000 provides a transparent link to the telephone system enabling full dial-out capability from any designated keypanel with keypad. The TIF 2000 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 2000 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.

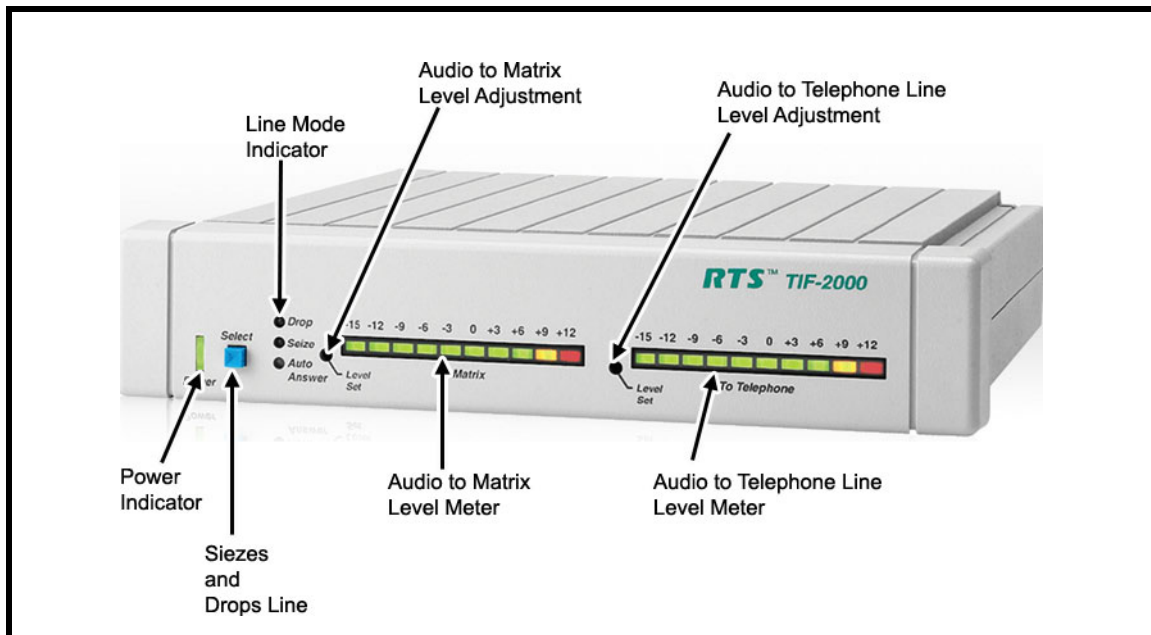


FIGURE 1. TIF 2000 Front Panel Features

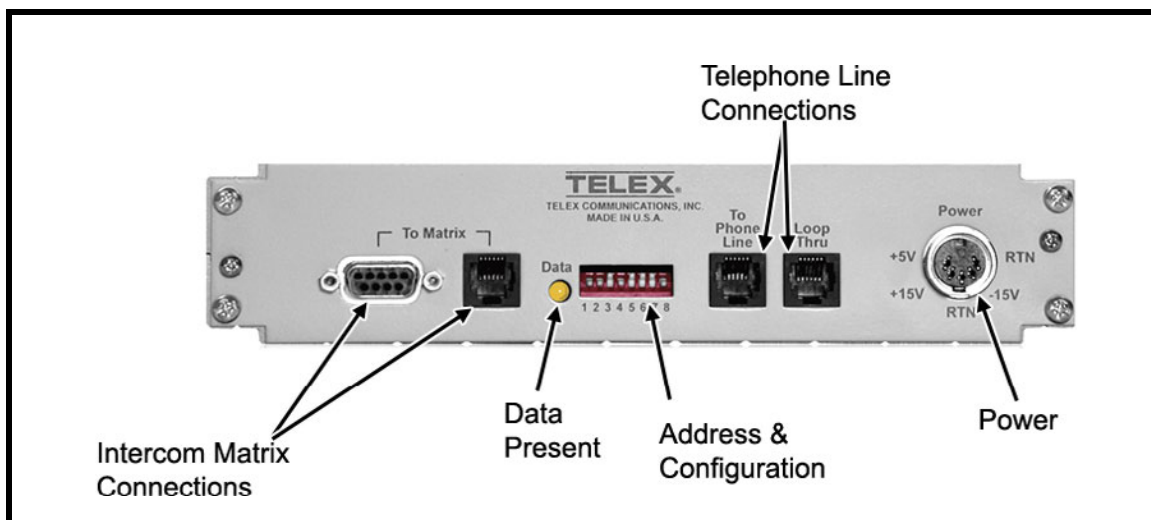


FIGURE 2. TIF 2000 Rear Panel Features

Unpacking

The TIF 2000 shipping box should contain the following items:

- 1 - TIF 2000 Unit
- 1 - Power Supply
- 1 - IED Power Cord
- 1 - User Manual
- 1 - Software Disk (contains country specific telephone system configuration files)

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

Rear Panel DIP Switch (S201)

The rear panel DIP switch contains switches to configure the most often changed options. These include, auto-answer on and off, ring signal on and off, intercom port address, and full-duplex method.

Auto-Answer

Turning on the auto-answer option sets 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 rings until someone at a keypanel answers the call or until the Select button on the TIF 2000's front panel (see Figure 1 on page 4) is pressed.

To **turn on auto-answer**, do the following:

- > Place **switch one (1)** in the down position.

To **turn off auto-answer**, do the following:

- > Place **switch one (1)** in the up position.

Generate Ring Signal

Turning on the generate ring signal option sets the unit so when the phone line is ringing, keypanels configured to receive ring signal produce an audible ring.

To **turn on the ring signal**, do the following:

- > Place **switch two (2)** in the down position.

To **turn off the ring signal**, do the following:

- > Place **switch two (2)** in the up position.

Password Required

Turning on the password required option sets the unit so when a call is automatically answered, the user must enter a password via **DTMF** (Dual Tone Multi-Frequency) before the unit allows communications. The password numeric sequence and length are determined by the settings of internal DIP switch S203.

To **turn on the password required option**, do the following:

- > Place **switch three (3)** in the down position.

To **turn off the password required option**, do the following:

- > Place **switch three (3)** in the up position.

Intercom Port Address

Switches four (4) to seven (7) determine the address of the unit. The port address is expressed in binary with switch four (4) being the **LSB** (Least Significant Bit) and switch seven (7) being the **MSB** (Most Significant Bit).

To **turn on (set bit to 1)**, do the following:

- > Place **the desired switch** in the down position.

To **turn off (set bit to 0)**, do the following:

- > Place **the desired switch** in the up position.

ADAM, ADAM CS, and Zeus units use a 1–8 address scheme for their ports (for example, ports 1-8 have addresses 1 through 8, ports 9-16 have address 9 through 16, etc.). CS 9xxx systems use 1–10 scheme for port addresses.

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

1. Determine the **port number** used for the TIF 2000.
2. Locate the **port number and its corresponding address** in Table 1 on page 7.
3. Determine the **DIP switch settings** by looking up the address determined in step 2 using Table 2 on page 8.
4. Set the **DIP switches** on the back of the unit (see Figure 2 on page 4).

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

1. Determine the **intercom port** (audio channel number) used for the TIF 2000.

NOTE: For port numbers ending in one (1) through nine (9), the address is the last digit of the port number. If the last digit is zero (0), use 10 as the address number.

2. Determine the **DIP switch settings** by looking up the address in Table 2 on page 8.
3. Set the **DIP switches** on the back of the unit (see Figure 2 on page 4).

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	346	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	449	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			
	SW4	SW5	SW6	SW7
1	Down	Up	Up	Up
2	Up	Down	Up	Up
3	Down	Down	Up	Up
4	Up	Up	Down	Up
5	Down	Up	Down	Up
6	Up	Down	Down	Up
7	Down	Down	Down	Up
8	Up	Up	Up	Down
9	Down	Up	Up	Down
10	Up	Down	Up	Down

NOTE: Shaded area is for CS9xxx system address only.

Full-Duplex Mode

Switch 8 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.

To **force full-duplex mode all the time**, do the following:

- > Place **switch 8** in the up position.
The unit is forced into full-duplex mode all the time.

To **force full-duplex mode only when audio is present**, do the following:

- > Place **switch 8** in the down position.
The unit is 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 2000 is forced into full-duplex mode all of the time (switch 8 up) rather than only when audio is present (switch 8 down).

Internal DIP Switch (S202)

Internal DIP switch (see Figure 3) is accessed by removing the top cover.

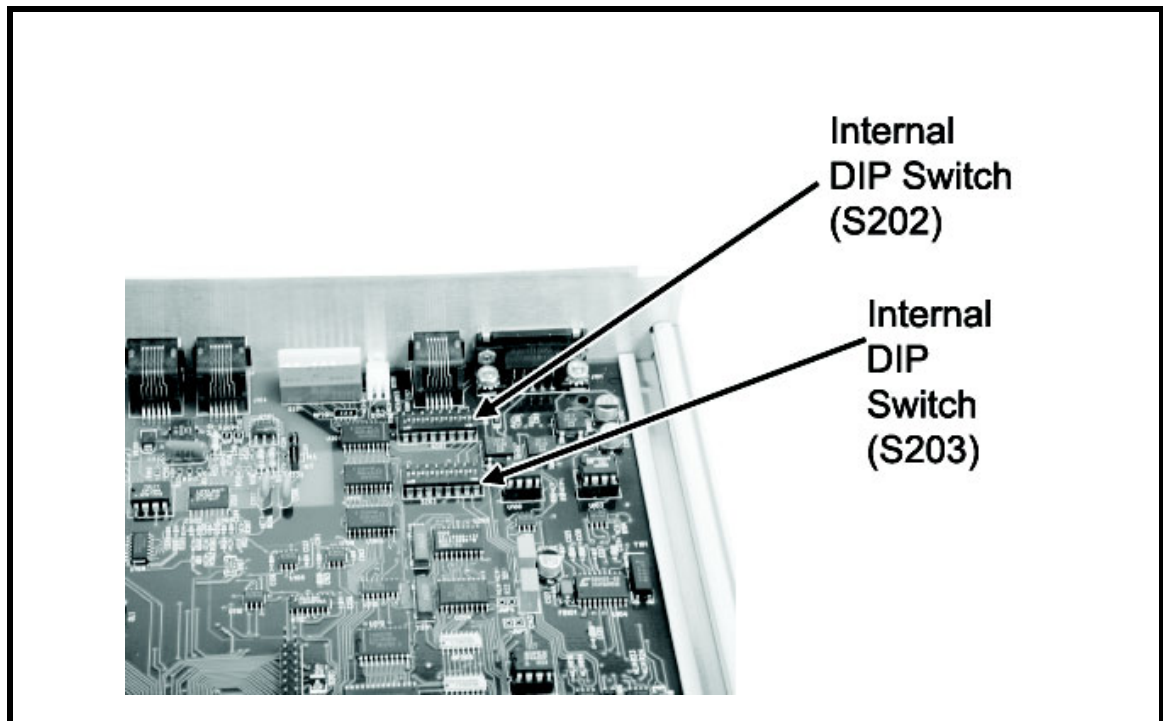


FIGURE 3. TIF 2000 Internal DIP Switch Locations

To **remove the top cover**, do the following:

1. Loosen and remove the screws as indicated in Figure 4.
2. Remove the cover by lifting up on the back portion of the cover.

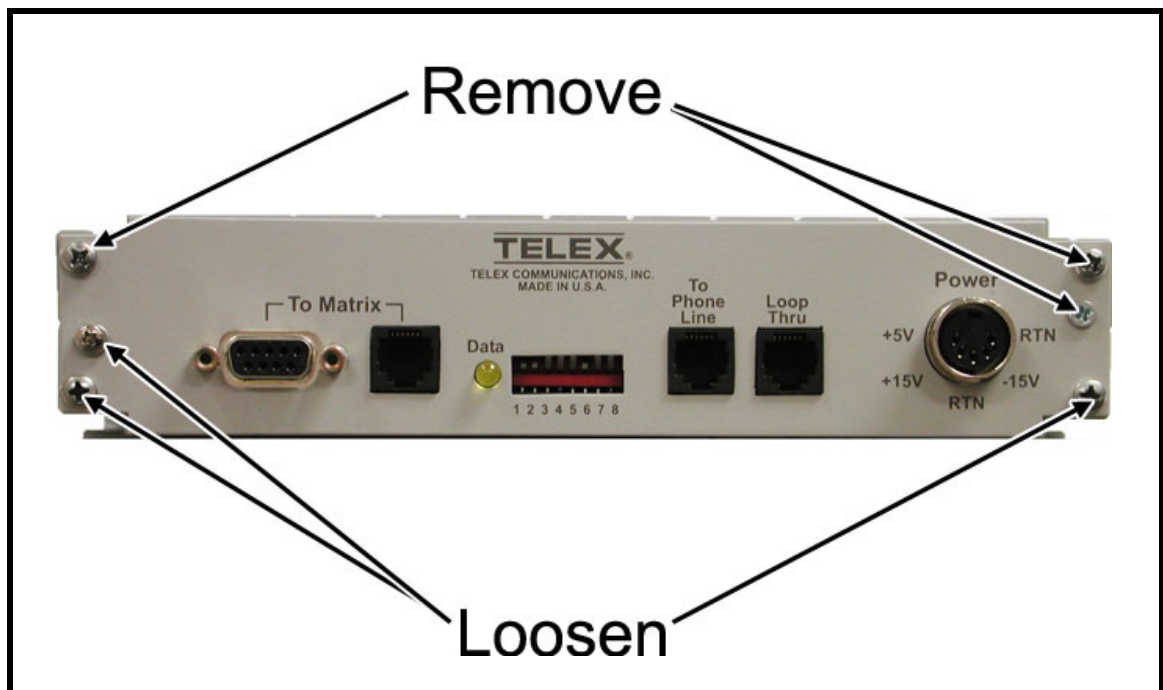


FIGURE 4. TIF 2000 Chassis Screws

To **reinstall the cover**, do the following:

1. Place the **front portion of the cover** into the grooves on the bottom cover.
2. Slide the **cover** toward the front of the unit while lowering the back of the cover.
3. Replace and tighten the **screws** that were removed or loosened as indicated in Figure 4.

Ring Count

TABLE 3. Ring Count Settings

# of Rings ^a	SW1	SW2
1	Off	Off
2	On	Off
4	Off	On
8	On	On

a. The ring count is approximate.

Switches 1 and 2 determine the number of rings before the unit auto answers. These switches have no effect unless switch 1 on the rear panel DIP switch bank is in the down position.

Use Table 3 to set the ring count.

DTMF or Pulse Dial Selection

Switch 3 sets the dialing mode to either DTMF 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, normal line seize operation (via a keypanel) is selected. When the switch is in the on position, a line is seized immediately upon designated TIF 2000's talk key being pressed via the keypanel.

1-Touch Dial

Switch 5 enables or disables the 1-touch dialing feature. When the switch is in the off position, 1-touch dial is disabled. When the switch in the on position 1-touch dial is enabled.

1-Touch Dial Operation

If a number is stored in autodial memory 1 on the TIF 2000, and the line is on hook, then the TIF 2000 autodials the number stored in autodial memory 1 whenever any keypanel closes a point-to-point talk key to the TIF 2000.

Fast Seize

Switch 6 enables or 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 2000 answer or seizes the line at the start of the first ring.

NOTE: A ring is not heard on any of the keypanels when fast seize is enabled.

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. For more information, see “Full-Duplex Mode” on page 8.

Audio Ducking

Switch 8 enables or 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 to eliminate feedback between the intercom system and the telephone line.

Internal DIP Switch (S203)

Internal DIP switch (S203) selects 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 on page 12.

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

TABLE 4. Password Length Dip Switch Settings

4	off	off
3	on	off
2	off	on
1	on	on

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

TABLE 5. Password Length Dip Switch Settings

Password	SW1	SW2	SW3	SW4	SW5	SW6
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

Rack Mounting

There are two (2) options for rack mounting the TIF 2000. If a single unit is to be rack mounted attach an MCP-2 rack mount kit. If two (2) units are to be mounted side-by-side, attach an MCP-1 rack mount kit. See Figure 5 for a depiction of the two (2) rack mount kits.

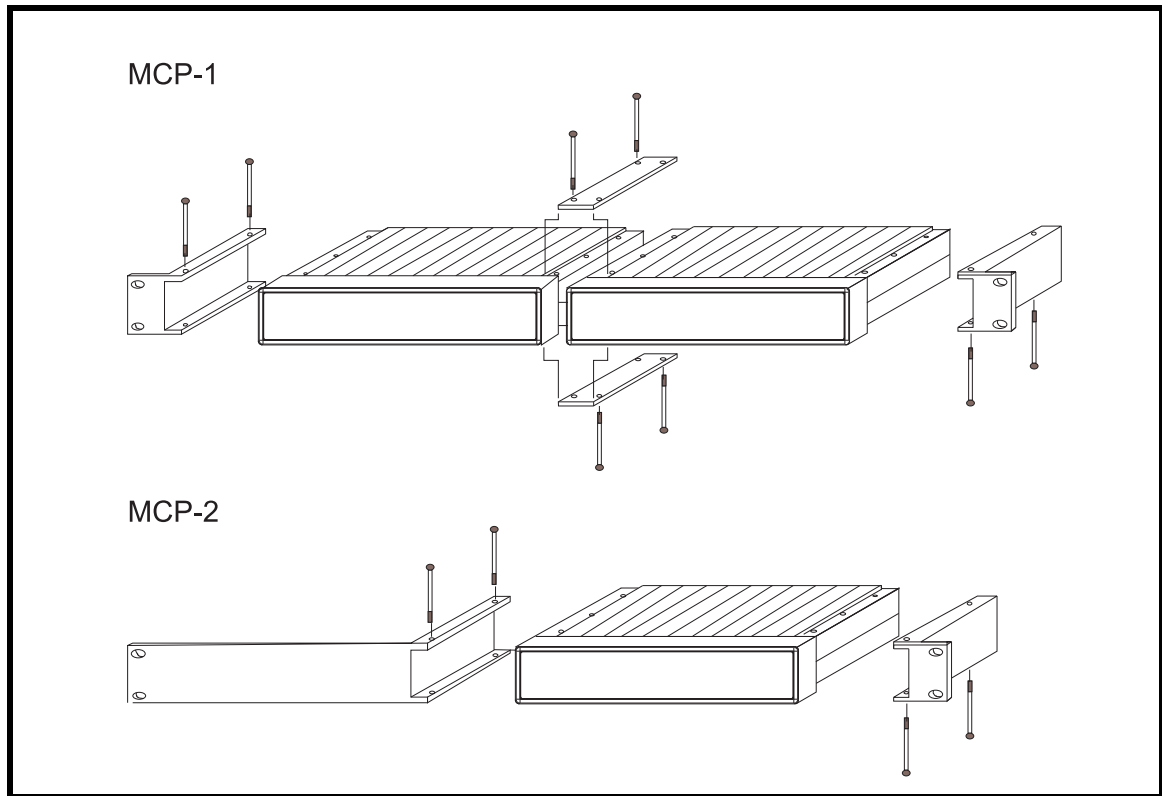


FIGURE 5. Rack Mount Kits

Connections

Intercom

Use either of the To Matrix connectors (but not both) to connect to an intercom port. The intercom port you connect to determines the address of the unit (see, “Intercom Port Address” on page 6). Cable wiring diagrams are shown in Figures 6 and 7. An LED labeled Data is located next to the Matrix connectors and serves as a basic indicator of data flow.

Telephone and Telephone Line

There are two (2) telephone connections provided on the rear of the TIF 2000. Plug the telephone line into the jack labeled To 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 2000 seizes the telephone line.

Power Supply

To **connect the power supply**, do the following:

1. Insert the **round connector** from the brick type power supply into the power connector on the rear of the TIF 2000.
2. Turn the **locking ring** on the connector to secure the connection.
3. Plug the **female end of the IEC type power cord** into the power supply and then plug the other end into an appropriate power outlet.

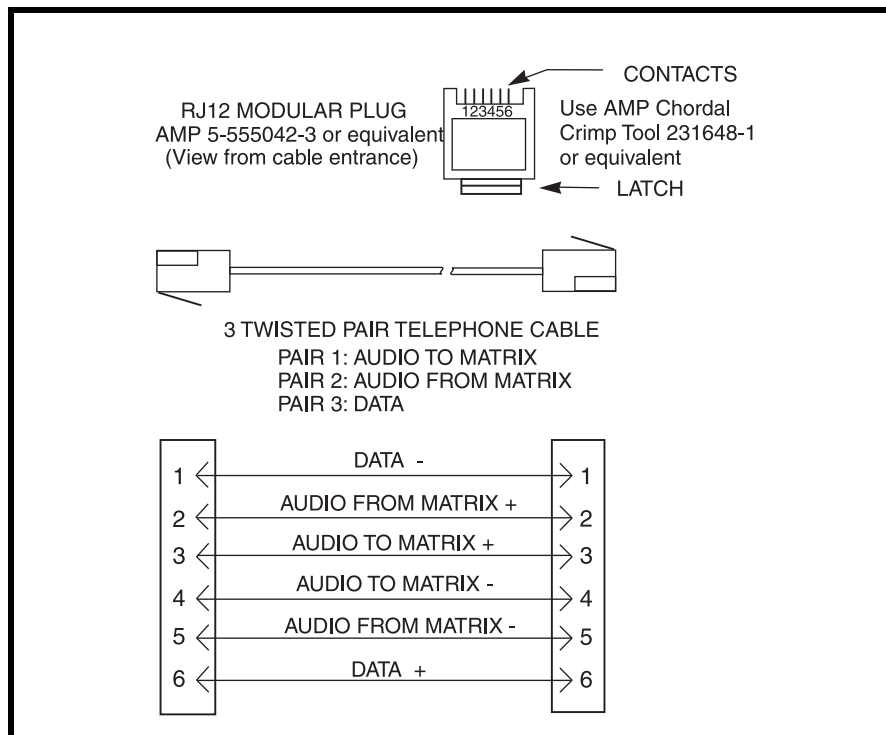


FIGURE 6. RJ-12 Intercom Cable Wiring Diagram

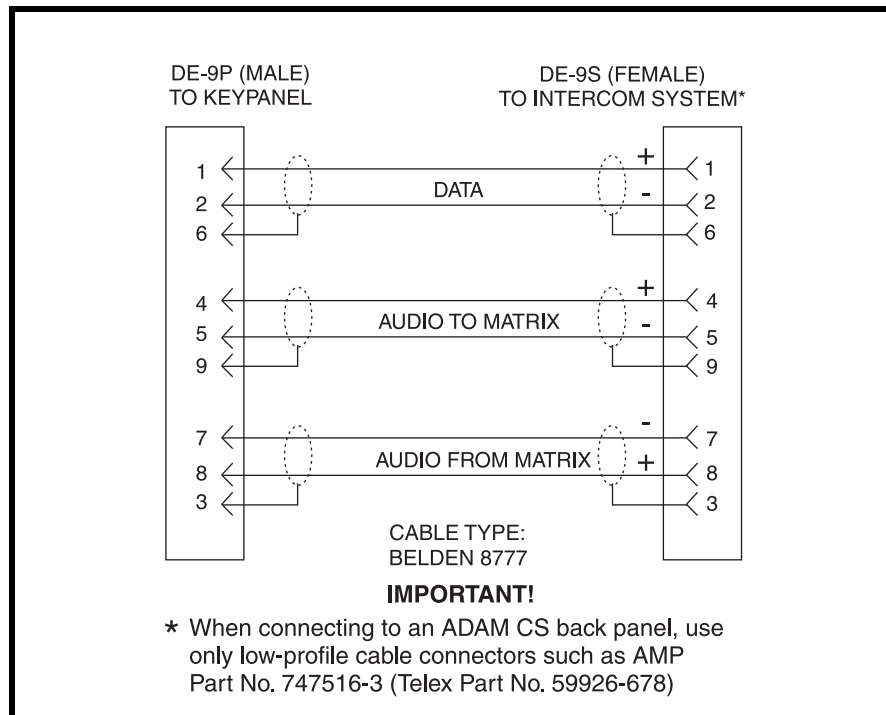


FIGURE 7. DE-9 Intercom Cable Wiring Diagram

Setting Audio Levels

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

Setting Audio Levels to the Intercom Matrix

Adjustments may be made via the front panel (see Figure 1 on page 4).

To **adjust the control to the Matrix**, do the following:

1. Using a small flathead screwdriver or trimpot adjustment tool, set the **front panel level control** for mid-range.
2. Have a caller **talk** at their normal level.
3. 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.

Setting Audio Levels to the Telephone Line

Adjustments may be made via the front panel (see Figure 1 on page 4).

To **adjust the control in to the Telephone Line**, do the following:

1. Using a small flathead screwdriver or trimpot adjustment tool, set the **front panel level control** for mid-range.
2. Have a caller **talk** at their normal level.
3. 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.

Configuring for a Country's Telephone System

The TIF 2000 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 2000 if it is not properly configured. If the system you intend to connect 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**, do the following:

1. Connect the **TIF 2000** to the intercom system.
2. From the menu bar in AZedit, select **Status|Software Versions|Keypanels**.
3. Select the **TIF 2000** entry you want to configure.

NOTE: The configurations are in a self-extracting archive on the included disk. Extract and copy these files to a known location on the computer connected to the Matrix.

4. Press **Ctrl+Shift+D** to start the software download process.
The download window appears.
5. Navigate to the **location** you copied the file to in step 4.
6. 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 2000 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:

TABLE 6. Country Configurations

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 From a Keypanel

The TIF 2000 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 2000. All that is necessary is to program a key to talk to the TIF 2000, 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 no-illuminated LED indicates a line which is not in use. A slow flash indicates a line which is in use (offhook). A rapidly flashing display or LED indicates a line which is ringing. In addition, the alpha numeric display displays digits as they are dialed, and the LED flashes for each digit.

NOTE: Verify the Don't generate tallies for TIF or trunk use check box is selected in AZedit. In AZedit, from the menu bar, select **Options|Intercom Configuration**.

Programming a Key to Use the TIF 2000

To use the TIF 2000, either to answer a call, or to call out, you must first program a key to talk to the TIF 2000.

To **program a key by port number**, do the following:

1. On the keypanel keypad, press **1**.
2. Key in the **port number** of the TIF 2000.
3. Press **PGM**.
4. Press the **talk key** you want to assign the TIF 2000 to.
You also need to use the listen key, so it should be assigned as either AF (auto-follow) or AL (auto-listen).

NOTE: The TIF 2000 only responds to commands which are sent via a point-to-point key assignment. If you wish to use the TIF 2000 primarily on a PL, you must add a point-to-point assignment as the L 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

Any keypanel may dial calls on the TIF 2000.

To **dial a call**, do the following:

1. Turn **on** the listen key for the line you wish to dial on.
A dial tone is heard.
2. On the keypanel keypad, press **4** (PHONE).

-
3. Press **PGM**.
 4. Press the **keypanel talk key** assigned to the TIF 2000.
You are in Dial Mode. Leave the talk key in the latched position as you dial the number.
 5. Dial the **number** you want to call.
As you enter each digit, the numbers appear in the alpha display above the key you are dialing on. If the listen key is latched on, you hear the DTMF tones as each key is pressed.
 6. Momentarily turn **off** the talk key to exit dial mode.
The alpha numeric display reverts to normal and you can use the key and keypad in normal operation mode.

NOTE: The keypad is used in the usual way. Digits 0-9 generate the DTMF digits 0-9. PGM generates #, and CLR generate * (# and * are displayed for these keys).

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

Hanging Up

The TIF 2000 detects that the caller 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 dial tone or a busy signal. Some telephone systems do not provide any of the above, so it is necessary to force a hang up. In addition, if the call was placed to an auto-answer device, it is necessary to force a hang up when the call is complete.

To **hang up**, do the following:

1. On the keypanel keypad, press **4**.
2. Press **CLR**.
3. Press the **talk key** where the TIF 2000 is assigned.
This disconnects the line.

NOTE: If the talk key 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 the above method to hang up.

Redialing the last number

The TIF 2000 remembers the last number which it has dialed.

To **redial the last number**, do the following:

1. Enter **dial mode**. See "Dialing a Call" on page 17.
2. On the keypanel keypad, press **CLR-0-0**.
The TIF 2000 automatically redials the last number it dialed.
3. Momentarily release the **talk key** to exit dial mode.

EXAMPLE: If you have a call 818-566-6700 and you are disconnected, issuing the redial command reestablishes 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 2000 has 24 internal memories for storing frequently used phone numbers.

To **speed dial**, do the following:

1. Enter **dial mode**. See “Dialing a Call” on page 17.
2. Press **CLR**.
3. Enter the **speed dial code** (a 2-digit code).
4. Momentarily release the **talk key** to exit dialing mode.

Storing a Speed Dial Number

A TIF 2000 can have different numbers stored in it. Unlike the TIF 951, the TIF 2000 stores the numbers in non-volatile memory and therefore does not require a UPS to maintain stored speed dial numbers.

Each speed dial number can contain up to 25 digits.

To store a speed dial number, do the following:

1. After dialing the number, but before exiting dial mode, click **CLR**.
2. Click **PGM**.
3. Enter the **speed dial code** you want to assign to the phone number.
4. 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.

Answering a Call

When a line is ringing, the alpha numeric display or LED above the talk key which is programmed for that line flashes rapidly.

To **answer a call**, do the following:

1. Turn on the talk key.
2. Talk into the microphone or headset.

NOTE: If you have been programmed as a default station, your panel rings whenever one (1) of the lines rings. If you do not have a key already programmed, the ringing line appears on your incoming call key (the key farthest to the right on the main panel, also known as the Call Waiting Window). 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 2000 System Set Up to Receive Calls

To the intercom system, the TIF 2000 is very much like 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 from the outside, then the TIF 2000 needs to be configured to allow then to use the phone line in much the same way a local user uses his keypanel.

Programming information for the phone is entered into AZedit just as if the TIF 2000 were an ordinary keypanel, by selecting Keypanel from the main menu, then select the TIF 2000 from the pick list of keypanels. The TIF 2000 operation is similar to a keypanel, except the keys are really the DTMF buttons on the user's telephone.

Auto-Answer Mode

To use the TIF 2000 in auto-answer mode, you must first enable auto-answer mode on the rear panel DIP switch bank, switch 1. See “Auto-Answer” on page 5. You may also want to enable Password Required (see “Password Required” on page 6) or set the Number of Rings (see “Ring Count” on page 10) before the unit answers.

When the caller dials into the TIF 2000, they hear the line ring, then the unit answers and a beep to request the password (if password required is enabled). The user then must enter the password. The unit beeps once to confirm a proper password. If the password is not correct the unit beeps twice to allow another try.

Once the password has been entered, the TIF 2000 establishes communications on key #1 automatically. From AZedit, this is seen as talk and listen #1. If, for example, the user were a camera operator, it might 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 on talk key #1.

Keys 2 to 7 may also be programmed. To use the other keys from the phone, 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 toggles 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 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 2000 to be manually answered, talk keys 8 to 15 are 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 behaves the same as keys 1-7. You may also program additional keypanels, PLs, IFBs etc. on keys 9-15, and the activate simultaneously by the 8 button on the phone.

Manual Answer Mode

In manual answer mode, the line rings 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 eight (8) rings, the TIF 2000 automatically answers the call, and if password required is enabled, the call is screened by requiring a password.

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

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 2000 calls these panels when the line is ringing. When the line rings, the TIF 2000 generates a ringer noise which is then transmitted to these panels. The panels display the TIF 2000's alpha numeric in the **CWW** (Call Waiting Window), and if a talk key has already been programmed on the panel, its alpha numeric flashes rapidly.

Using the TIF 2000 From the Telephone

The TIF 2000 behaves differently depending on how it is programmed. It is up to the operator who programs the TIF 2000 to convey to the user what to expect. If the user is not familiar with the operation of the TIF 2000, it is best to keep the operation as simple as possible, until they are familiar with its operation. 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 2000 field user only requires one (1) service, it is best to program that service on key 1, enable auto-answer, and disable password required. The telephone user then only

has 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.

In general, it is very easy to use if the user knows what to expect. When calling in, if the unit is in auto-answer mode, it answers the call after the number of rings configured. If password required is not enable, the unit indicates it is ready with a single beep. If password required is enabled, the TIF 2000 prompts for a password with two (2) beeps. The user must enter the password, then the unit either beeps once if the password is correct, or twice if the password is incorrect. The user is allowed three (3) attempts to enter the password, after which the TIF 2000 disconnects. In the event a user calls the TIF 2000 when the intercom system is either turned off or absent, the TIF 2000 answers and prompts with three beeps.

Once the password is entered, the TIF 2000 enables 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 they may select other keys with their DTMF pad. They may turn off key 1 by pressing DTMF 1, or may continue to just add other keys. At any time, the caller may turn off all keys without hanging up by pressing zero (0). When the call is complete, the caller should enter ***#**, which causes the TIF 2000 to disconnect. This is more reliable than waiting for the phone system to pass the disconnect information to the TIF 2000.

DTMF Codes

Once programmed, the TIF 2000 may be operated via the DTMF keypad on the telephone. The DTMF keys have the following functions:

Normal Mode

- | | |
|---------|---|
| 1 | Toggle on and off talk and listen #1 to #7/ |
| through | |
| 7 - | NOTE: Initially, #1 is 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 call to recall the panels without having to hang up and redial. Toggling this on allows 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, press 0, to turn them all off, and start over. |
| *1 | Toggle on and off listen 1-7. By pressing * before the key, you only change the listen. This allows you to |
| through | listen to a circuit without talking to it, or to talk to a circuit without listening to it. |
| *7 | |
| | NOTE: You automatically listen and talk to #1 if the TIF 2000 auto-answers the line. |
| *8 | Toggle on and off listen for 8-15. |
| *# | Disconnect. This causes the TIF 2000 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 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 has worked as intended.

1 nnn #K	Program a talk key to a point-to-point
2 nn #K	Program a talk key to 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 a point-to-point
2 nn # *K	Program a listen key to a 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 power keys.
2. nnn is the three digit number 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, press the digit (1-7)
5. *K is the key followed by a digit (1-7), This is used to represent the listen line.

Specifications

Matrix Input/Output

0dBu to +20dBu

Telephone Input/Output

-30dBu to +6dBu

Noise (200Hz to 3.8kHz)

+40dBu or less

Harmonic Distortion (300Hz to 3.8kHz)

Intercom Side:

-30dBu or less

Telephone Side:

-25dBu or less

Frequency Response

300Hz to 3.8kHz +0dB, -6dB

Matrix Connectors

- DE-9S Female
- RJ-12 Female

Telephone Line Connector

- RJ-11 Female

Telephone Loop-Thru Connector

RJ-11 Female

Power Requirements

100-240VAC, 50/60Hz, 1A

Environmental

Operating Temperature

0°C to 50°C

Storage Temperature

-20°C to 75°C

Humidity (Operating & Storage)

0 to 95%, non-condensing

Dimensions

1.72" (44mm) high

8.19" (208mm) wide

8" (203mm) deep

Weight

4.4lbs (2.0kg)

Finish

Thermoplastic front panel, aluminum case and rear panel, light gray finish

Approvals

CE

For use with FCC registered protective interface devices.

**Specifications subject to change without notice.*

Telephone Interface Requirements Form

October 2008

The TIF-2000 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-2000. 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-2000. Additionally, some countries require governmental approval for connection of the TIF-2000 to the public telephone system. Telex handles these requirement on a case by case basis and may require a one-time engineering fee to adapt the TIF-2000 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-2000 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**